THE

AMERICAN FARMER,

SPIRIT OF THE AGRICULTURAL JOURNALS OF THE DAY,

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." . . . . *Virg.*

Vo. II. BALTIMORE, FEBRUARY, 1847. No. 8

WORK FOR FEBRUARY.

Although this is the *second* month in the *Calendar*, it may in fact be said to be the first in the active operations of the field. With it, in parts *more south* and south west than this, the plough and all the other implements of husbandry are brought into requisition and made to perform good service to the husbandman. While in those this side of the Susquehanna, in Delaware, that little but sterling State, and New Jersey, her sister in all that belongs to true greatness, February may be said to be the month of activity and labor. In view of these facts, we feel it to be proper to recall to the memory of our numerous readers and agricultural brethren, that as it is their interest, so should it be their good pleasure to bestir themselves in order that nothing be left undone which should be done during this month. He who desires to prosper as a husbandman should recollect, that the great secret of success lies in always being in advance of his work, and that unless he takes time by the forelock, as *time* is ever passing and awaits not the bidding of any, by negligence—by non-improvement of the present—he may suffer that to escape which he never can recall, and compromise interests which are dear to him. To avoid effects so disastrous it is only requisite that the proper attention be paid to husband time, and to permit no work that should be executed one day to remain over to another—and to always bear in recollection these truths—that as "procrastination is the thief of time," so is it incumbent upon all to do their work in season.

And while we would thus impress the value of vigilance upon our brethren, we consider it opportune to the occasion to remind every *corn-grower* of the fact that as a new market has been opened in Great Britain for their surplus corn, that they should increase their energies to accumulate a greatly increased quantity of manure to bestow upon the grounds allotted to the culture of that grain, in order that their wonted yields may be produced without the same quantity of labor being bestowed and their profits thus be increased. Franklin said years ago that time was money, and while that adage is equally true now, it is no less true that he who economises labor makes it equivalent to money—and that, therefore, it should be the chief object of our profession to provide and give to our corn fields generous supplies of manure, as by so doing we profit to the full extent of the labor saved.

Having thrown out these hints we will proceed to call attention to few of the many things which should be attended to

On the Farm.

Tobacco Beds. It is full time that the planter should be attending to the preparation and sowing of his tobacco beds, and in order that there may be no failure in the supply of plants, it would be well that the sowings be in different beds and at intervals of several days apart, in order that if one bed of plants should fail that another may succeed. Without pretending to know much about the culture of tobacco, and only judging of it by our knowledge of its constituent elements, we would say, that every bed when sown, besides being burned should have strewn over it at the time of seeding a compost comprised of 7 parts of well rotted dung, and one part plaster—or seven parts of sifted mould from the woods and one part plaster—and that whenever the latter may be the compost used, that the mass should be moistened with urine, the whole to be well mixed together. Reposing the utmost confidence in the superior judgement of tobacco planters, whom we know to be among the most enlightened tillers of the soil, we desire to throw these remarks out as mere suggestions, leaving to them to profit by them or not as they may best please. And as an additional security against the ravages of the *fly*, we would strew over the beds, just as the plants make their appearance, a mixture of equal portions of soot and flour of sulphur. Besides acting as a repellant of that destructive insect, such mixture would operate as a powerful manure, whose nutritive properties would urge forward the plants to vigorous growth, a thing which every tobacco planter knows to be of the utmost importance.

Winter Ploughing. As all stiff clay lands are im-

proved by being turned up to the meliorating influence of winter frosts, every opportunity should be embraced, when the ground is in a condition to undergo the process, of ploughing all such grounds. But care must be observed never to plough when the soil is *wet*, as ground ploughed in that condition remains like a bed of mortar throughout the entire season.

Wood, Timber and Fencing. As this is, perhaps, the last month in which it may be safe to fell trees for either of these purposes, it should be an object with the economical farmer or planter, to procure a full supply of each during its continuance. No man who consults the comforts of his family would willingly permit them to be without a good stock of fire wood, to carry them through the winter and spring—his love towards those who have claims upon him to shield them from discomfort will prevent that—and the pride and ambition which all good husbandmen possess, will prove as an ensurance that he provides himself with all the timber which he may need for farm purposes, as also with an abundance of posts and rails to *repair* and *renew* his fences. The emulation which always prevail among neighbors, as well as self interest, alike point to this course as the proper one, and as it does so, we shall leave the hint now given to be improved by those whom it may concern.

Fences. It should be among the first objects of every farmer and planter to make a thorough examination, in person, of every pannel of fence on his estate, and to have every repair made which they may need. Where new fencing may be required, that should also be done without any delay whatsoever, as it is useless without good enclosures to attempt to protect one's crops.

Gates and Bars. Every owner of a farm should provide each of his fields with a good and substantial gate. But if it should not be convenient for him to do so, he should at all events provide himself with a good set of bars, which should be well secured.

Barns and outbuildings. The farm buildings of every kind should be minutely examined, and all repairs necessary made. This done let each be whitewashed inside and out. In the country nothing tends more to give the appearance of neatness and comfort to one's homestead than labor thus bestowed.

Corn. As in several of the Southern states this crop is put in during this month, we deem it proper to remind the growers in such states, that rich soil is essential to a good crop, and that where the land is not naturally very fertile, it should be liberally manured, and that unless lime be present in the soil it should be furnished in greater or lesser quantity. Where it may not be convenient to give a *full* dose, a *partial* one will answer, even if that partial one be only at the rate of 5 bushels to the acre. If it be practicable to obtain them, 5 bushels of ashes, and one of plaster, in addition, per acre should be sown over every corn field, or applied on the hill.

Working Horses, Mules and Oxen.—Too much care cannot be bestowed upon the working animals at this season of the year, as it is important that they should be in good condition when they shall be called upon to begin the labors of the season. It is not enough that the owner may allow them plenty of provender, but it is important that he should *know* that they actually get what he may allow them, and that fact can only be ascertained by personal supervision, as he may rest assured, that unless he sees himself to this department, the neighboring groggeries will get many a bushel of oats and corn which he had fancied had gone into the mangers of his beasts of burthen. Nor is a liberal allowance of food all that is necessary to keep his working cattle in order. The currycomb, or card, and brush, and whisp of straw should be daily applied to their hides to open the pores of the skin and loosen their hides, as cleanliness is indispensable to the preservation of their health. Their stalls too should be provided with straw, which should be renewed sufficiently often to secure them at all times dry bedding. And while these attentions are paid them, they must receive at least a gill of salt twice a week, or a mixture of salt and ashes, or salt and lime in the same quantity.

Milch Cows and In-calf Heifers.—These animals should receive increased attention both as regards food and lodging. It is impossible that the cow at the pail can secrete much milk when fed upon dry food alone. In addition to hay or fodder it is necessary they should get daily messes of succulent food of some kind; it matters not whether it be in the form of slops or roots. The heifers too, which are for the first time about to become mothers, should be more generously fed than usual, in order that they may be in strength to give birth to and sustain their young. If daily rubbed down with a whisp of straw, and provided with warm lodgings and dry bedding they will be all the better. They must be given salt twice a week. And as a preventive of the *hollow-horn* a spoonful of spirits of turpentine should be poured into the *cup* on the back of the head just behind the horns.

Sheep.—*Ewes* which may be in-lamb should daily receive about a gill of grain or beans per day, or its equivalent in roots, in addition to their hay or fodder. This will give them strength and condition to bring forth their young and suckle them afterwards. A mixture of salt and tar should be kept in a trough under cover, which should be accessible to them at all times. The wethers and other sheep intended for fleece bearers, should receive similar treatment, as nothing is more demonstrable than that good feeding is promotive of the growth of wool, and it is worthy of remark, that bean-meal will give the greatest yield of wool. For a more detailed statement as to the proper winter treatment of sheep we refer to our former numbers.

Swine.—Breeding sows require warm lodgings, good bedding, and to be fed moderately well at this season, and particularly as they may approach the period of pigging. They should be regularly water-

ed daily. Nor should the person having charge of them fail to throw them twice a week, a shovelful of charcoal. The store hogs should also receive generous feeding, for unless they be so fed they will lack weight at killing time, no matter what breed they may be of. Some breeds we admit will grow faster and larger than others, and take on fat more readily, but where great weight is desirable, the best of them must be furnished with the *substance* to grow upon.

Colts and young Cattle.—These animals should be provided with good comfortable lodgings, where they may repose in comfort, without being exposed to the cold and pinching winds, and be protected from rains and snows. By such protection they will keep in condition upon less food, grow better and mantain better health. They should be fed liberally, though not profusely.

Hauling out Maaure.—This is at all times one of the heaviest and most tedious jobs of the farm and plantation, it should, therefore, be the object of the farmer who justly estimates time, to avail himself of every good day when the ground is *firm*, between this and the spring, to haul out his manure; and to prevent injury from evaporation, it would be well for him to strew plaster over each pile as he may drop it down in the field. By taking this precaution, the plaster will condense within its own body, the enriching gases as they may be eliminated by the decaying matter of the manure piles, and hold them until the next rain, when they will give them up to be carried back into the general mass. Thus relieved of its gaseous burthen, the plaster will be again in a condition to perform the same office, and thus preserve, for the use of the contemplated crop, those parts of the manure which are the most fertilizing in their properties, and which from their volatile nature would be otherwise lost to vegetation. For fuller views on this subject see the more elaborate article in this number, on the action and uses of plaster.

Stables.—The health of horses would be greatly promoted, if powdered charcoal or plaster were strewn over those parts of the stalls where the liquid voidings fall.

Poultry Houses and Poultry—The poultry houses should be thoroughly cleansed. The nests should be cleaned out, all the hay, straw or filth, should be removed from them, and the *nests* receive a white-washing inside and out. The *roosts* should also be white-whashed—and the house itself should be white-washed inside and out. The food of the laying hens should be generous, and care must be taken to place *lime* where they can have constant access to it, and whenever convenient, a little chopt fresh meat should be given them.

Carts, Tools and Implements of Husbandry.—The time has now nearly arrived when all those will be called into requisition, therefore, go at once, without farther delay, and have each carefully handled in your presence—minutely examine each yourself. Those which may need repair, send forthwith to the smith-wright, wheel-right or plough-maker, and have them repaired. When the repairs shall have been effected see that they are brought home and put under cover. A careful farmer or planter should never wait until he may want to use a cart, a wagon, a tool or implement, to ascertain whether it be in order, but should always so keep them as to be assured that they are in the best possible condition. Attention to this part of one's duty is indispensable to success.

And while we are upon this part of our monthly converse, we will remark, that as good tools and implements contribute much to lessen the toils of the field and ensure success to agricultural enterprise, so should it be the pride of all to provide themselves with them.

Grain Fields.—Inspect each water-furrow in your grain fields, and clean them out, so that no clod of dirt, or stone, or stick, remain to impede the free passage of the water, as dry beds contribute much to comfort the plants, encourage their growth as soon as the sun has sufficient power to warm the earth, besides preventing to a great extent the spewing up; consequent upon a supersaturated soil in the breaking up of the frost in early spring.

The Orchard.—Fruit trees of all descriptons should be examined, and have all dead limbs cut off. The operation should be performed with a sharp saw; the limb must be cut down into sound wood, and the wood rendered smooth by a drawing knife. This being done, a *plaster* formed of fresh cow dung, clay and lime, made into the consistence of mortar, should be applied to the wound: over the plaster a covering of strong sugar loaf paper should be tied to protect it from the weather. An equally good plaster may be made of equal portions of tallow, beeswax and rosin, to be melted and put on with a brush while warm. Pruning generally may be now performed, but all wounds must be treated as above directed. When we speak of pruning, we do not desire to be understood as recommending the extensive cutting of the limbs, but only such as may be absolutely necessary to give free circulation to the air.

If there be moss on the trees, or dead bark, either should be scraped or rubbed off, and the body of such trees should be painted with a mixture made of equal parts of *soft soap*, *salt* and flour of sulphur. This mixture should be freely applied from the roots upwards.

Sowing of Clover Seed.—As no system looking to the permanent improvement of the soil can be conducted without the turning in of clover-lays form a part of it, we commend to every one the practice of sowing clover seed on every wheat field, and to sow it during this month. A bushel of seed to every *five acres*, is about the proper quantity. If sown on the snow so much the better.

Having now concluded our monthly hints, we may be permitted to hope that they will be received in the same kindly spirit in which they are offered, and that, though they may not possess the spice of novelty, they may prove serviceable by way of remembrancers.

EXPORT OF BREADTTUFFS.—More than 4.000.000 bushels of Grain were exported from New York city last year to *foreign countries*, besides 1,193,028 bbls. Flour, equal to 5.000.000 bushels more, making a total of 9.000.000 bushels, or its equivalent, from a single port. It is at the rate of 25,000 bushels a day, the year round, Sundays and all. It is more than half a bushel to every white man, woman and child in the nation.

POTATOE DISEASE

To the Editor of the American Farmer

Dear Sir—I have the pleasure to hand you a valuable essay on the Potatoe disease, which is just received from W. W. W. Bowie, Esq. of Prince George's Co. Mr B's remarks are not from conclusions founded on theory, I imagine, but practical experimental tests, added to close thought and observation. His letter, however, speaks for itself, and remarks from me, relative to it, are superfluous.

I am permitted to use it for the best interest of agriculture, and know of no better mode than to diffuse it among your numerous subscribers.

Very respectfully, yours,

R. S Jr.

22nd December, 1846.

To Robert Sinclair, Jr. Esq., Baltimore.

Dec. 20th, 1846.

My Dear Sir,—Your very kind letter reached me in due course of mail, but really my time has been of late so occupied by sundry claims, (wherewith it was wholly absorbed,) that between *law*, *farm*, and private affairs, I have hardly had the time to kiss the little girl, box the boys, and say a gentle word to the "*better half*" of my humble self. Christmas is coming and so too I trust is a little leisure for me. Therefore, here the 4th day from that best of days in the year I find a moment to answer your letter. I wish that my ability and experience allowed me to answer it as becomes the subject matter of yours to me. "The Potatoe Disease," is a prolific source to exercise the mind upon—it has engaged the ablest pens in the world—it has fired the imagination of the Poets, and called out the deepest philosophers in the most learned and abstruse defences of favorite theories. And it has at the same time called out the honest thoughts of the truly practical and intelligent among our honest and *intellectual Farmers*. Hence, I have never written a line or a word on the subject, and should not now but that courtesy required me to answer your letter, if for no other reason, to thank you for the excellent treatise you sent to the "Farmer," for *December*. Your views and suggestions are excellent, as every reader will admit, who reads and reflects upon your treatise I now refer to.

Not one of the many writers have found out the cause or even the probable cause of the *disease* therefore no specific remedy has been discovered, and cannot be discovered till the cause is positively known.

I am too unlearned in the Sciences to attempt an explanation of the large portion of natural phenomena coming under my daily observation; nor to explain the connection that exists in many cases between cause and effect. To those more learned, I leave the truth after I have stated my views, based upon experiments and ascertained data. I give you my opinion, upon what it is founded, but the *why* and *wherefore* it is so, you must get some one far greater than I, to expound unto you. The cause of the Potatoe disease is from using *too much manure and planting too long a time the same sort or kinds*, without often enough resorting to the seed for newer and different kinds.

The kind of Potatoe I have raised, by sowing the seed eight years ago, which I call "*Bowie-Seedling*," have now arrived at hardy perfection, and become nearly akin to the *Mercer*, from the *seed* of which it was raised. But it is becoming now for the *first* time, subject to the disease. For the first few years it was very imperfect, being of various forms, and of different color, and small, but free of disease, until this year. This year, slightly affected, but not near so much so as other kinds on my own farm and on my neighbors' Like every other object in the vegetable, and indeed I might say also *animal* kingdom, it having reached a certain stage of perfection, can be carried no farther in improvement, and must deteriorate. It must be crossed, or aided by some *change*, or it will in a few years deteriorate into utter worthlessness. Breed animals in and in, and they will become good for nothing. It is true, that by skill, care and proper means, flowers and fruits, and vegetables, become, from useless, trifling eye-sores and unwholesome non-descripts, large, lustrious, and beautiful; but there is a stopping point!—the Peach will *never* become as large as a 80 lb. Pumpkin, and I venture to say, there never will be seen a *grass-green* horse. God has said "*thus far shalt thou go and no farther*." While He has placed a limit to human means, I cannot believe that he has prepared an article of human subsistence, which is so necessary for the support of millions, and will permit it to become totally useless, and as some seem to fear, will in a short time eradicate it from the earth.

The Potatoes I raised from the seed, are free from disease, in comparison with other kinds, but will become diseased I have no doubt in a few years. Quere—would not seed *now* from *them*, be productive of a Potatoe *free from rot?*

Too free use of manure hurtful. Animal and vegetable manures are particularly productive of weeds, worms, flies, and stimulate the vines to great and rapid growth, whereby, from all these causes combined, smut, mildew, and other diseases are generated. The *first* year the crop may be slightly affected—the next year it becomes more so—and thus members of the same diseased family are again planted to become still more impregnated with the distemper, by the same appliances which first caused it, and thus, fuel is added to the fire year after year, until they become so diseased, that the farmer is compelled to "*change his seed.*"

It is a well known fact, that until a few years *before* the appearance of this Potatoe Rot, but little attention was paid to the raising and using of great quantities of manure. And those who first used manure *extensively*, used it upon their *root* crops; from seeing a great increase in these by its lavish use, they were led to use it in quantity upon other crops. Again—the Potatoe disease commenced in Europe first, where heavy manuring of them with unrotted manure, had been longest practised, and so in *this* country. It began first in the north, with those farmers who had first caught the flame of improvement in agriculture, by means of *manure*, which the immortal Buel had lit up in a land where the people were more easily persuaded to look well to their own interests, than our people are, who had been already for years enlightened by the "American Farmer," tho' they but seldom practised its precepts. Of late years, *our* people have manured heavily, and lo! the rot affects *our Potatoes*, for we bought "Mercers" from the north, and practised northern cultivation with them.

Another fact—all scientific writers propose the use of plaster, lime, salt and other mineral manures, but *there* they stop, it not occurring to them that unfermented, or other vegetable and animal manures are hurtful. They say, that where plaster, salt, or lime, &c. have been used, the potatoes are less, and in some cases not at all diseased. They then account for it

by going into the effects of these substances upon the air, the dews and a thousand other chimerical causes, but all conclude at last that nothing can be arrived at with certainty. Now for my other *facts*—I had last year several rows of Potatoes. (Mercer) manured with tobacco stalks alone; there was hardly *one* diseased potatoe, the rest were alongside manured with well rotted stable and hog pen manure—*many* of the Potatoes were *rotten*, others *unsound*. Now it is well known that there is a great deal of nitre in the tobacco stalk, and the vegetable parts are so woody that they did not fully decay while the Potatoe was maturing, consequently the only benefit the Potatoe derived was from the *nitre* in the stalk.

I sold to a neighbor some from my seed-heap. He planted them in April, upon a *dry*, sandy or gravelly soil, that was *poor*, but no manure but a light sprinkle of ashes unslacked, over them. He had splendid, *sound* Potatoes, and they were from time of planting, in *eight* weeks, as large as hen eggs, with not *one* diseased, as he will prove on oath, *he says*.

In 1845 I raised some of the soundest and finest potatoes in my neighborhood, you and Mr. Sands saw specimens of them. My neighbors bought this spring most of them for seed, altho' some were touched by the rot—I made about 160 bushels, and I lost of them 8 or 10 bushels. Half of these potatoes were manured in the drill with stable manure, and other drills were with tobacco stalks, while some had *nothing* but a good sprinkle of plaster. Where the plaster was, none were rotted, were the *fewest* but largest; those least injured by rot were where the tobacco stalks were; and where a heavy coat of manure was placed, there was a large crop, *but much disease*.

One of our most successful Potatoe growers, and excellent managers, Mr. B. D. M. never had the rot in his potatoes, until he had used the same seed, or his own kind, for many years, and had resorted to heavy manuring, with long manure, and other barn yard and stable manure. Then *he* (as was formerly his practice) selected his poor knolls and barren spots for his potatoes, and used no other manure than *tobacco stalks;* he made great crops, and the most splendid, mealy, delicious potatoes,—outselling *everybody;* and he made *large* crops. One year from *seven* pecks planting, he gathered 170 bushels of fine potatoes. This is a strong fact.

The *soundest* and best potatoes raised in our county are made upon our poorest lands. In what we call "Chinquepin Hundred," we hear but little or no talk of "the rot," but while they boast not of *large* crops per acre, they always can give you fine, large, *sound* potatoes to eat. And they do not use much manure. This is another strong circumstance.

An old writer, as far back as 1785, when no rot was heard of, says, "to make good Potatoes, take old *worn out* stubble land and plow it up in the fall in two furrows back to back, so as leave drains about two feet apart, by this means it becomes thoroughly dry." * * * * * "When you plant, put a piece of dung as big as your fist upon each potato set, and let them be the length of a man's foot apart in the drill." This you see is not heavy manuring.

From all these *facts* and circumstances, I have come to the following conclusions, without I candidly confess being able to assign a scientific reason why it is so, and *why* it should be so, but I know it is so, and *seeing* and *feeling* makes us have *faith*, altho' we may not be able to explain the mysteries of that we *feel* to be true—

1st. Conclusion—We do not often enough, with sufficient care, propagate new species of potatoes from the seed.

2ndly. We use too extensively vegetable and animal manure upon our potatoe crop, especially upon our rich lands.

3rdly. We should be careful to select dry ground for this crop. Not high, hilly land, but dry soil, one which retains not water long, but is deep and dry because the water can easily penetrate it below the roots and pass off without injury to them.

If I am right in my conclusion, the remedy for the disease I would suggest is, to wit:

1st. Let every farmer select a few fine Potatoes free of rot, and plant them in only *thin soil*, without any manure, and save the seed; from this, let him propagate a new variety for himself, saving and planting from the product of this seed the handsomest and best specimens annually, for four or five years. If at that time his production should not be valuable, it will not have been without profit to him, for his example will have urged others to a like course, and from the many efforts, he will no doubt derive great benefit, as some one or other will have succeeded in procuring a superior kind of potatoe.

2nd. The land intended for potatoes next year, to be broken up this winter and subsoiled. The *poorest* land to be selected, and given, say not more than twenty loads of manure per acre, spread over and ploughed in this winter. If the land be of good quality, no manure at all. Next spring when you plant the potatoes, be sure to put no manure, except this mixture, sowed over the potatoe setts, so as to make the bottom of the trench look white. Mixture—1 bushel of lime, 1 of salt, 1 of unleached ashes, ½ bushel saltpetre, ½ bushel of soot, or charcoal. Let them have no other manure, except when they come up above ground, give them a good dressing of plaster, sowed just over the top of the drill. The potatoes used should be *sound*, and *small* ones selected, as they are commonly most freed from disease.

I do not contend that by this course that *more* potatoes can be raised, but I believe that by such a course, the rot will be cured, and many new and superior kinds of this excellent vegetable be the result.

These suggestions and deductions of my own, drawn from facts coming under my own observation, I offer with great diffidence, as they are at variance with the most learned of the writers upon this important subject. I should never have advanced them, perhaps in public, had I not been called upon by your letter, for my views in relation to the matter. I now give them to you for what they are worth—and have the pleasure to be

Your friend,
WALTER W. W. BOWIE.

BUTTER MAKING.

GERMANTOWN, Philadelphia Co. Penn. }
January 13th, 1847. }

To the Editor of the American Farmer:

SIR,—The Philadelphia Agricultural Society, having awarded to me their first premiums for the best butter, for the last two or three years successively, persons are continually applying to me for information, as to my method of producing it, its manufacture, &c.

The Philadelphia market is, you know full well, most highly celebrated for the excellence of its butter, so that the obtaining of this premium every year for the best of the best, is naturally a matter of no small gratification to me; but my real motive in sending this communication for your Journal, is to get rid of the trouble of writing long letters to gentle-

men and ladies I never heard of, before they took it into their wise heads to make me pay postage for the honor of answering their queries.

I am not aware of anything new or uncommon in my formula, and perhaps my success is more attributable to a well founded system, and entire cleanliness than to any other cause; but however that may be here it follows.

About one week before the day of exhibition, I turn all hands that can be spared from other work, into the spring house to wash, to scrub, to white wash, &c., in short to purify and clean the floor, the walls, the shelves, the doors, &c., as perfectly as human means can prevail in extinguishing every thing of a filthy nature or unpleasant smell. Do not suppose from this, that my spring house is neglected during other portions of the year; on the contrary, it is kept in more neatness and cleanliness than any other one I know of. The *tin* pans are then put into a large boiler, and *boiled* for one hour, then taken out and scoured with *white silver sand and pure hard soap*, then rinsed off in pure clean water and put away for use. Three days before the exhibition, the cows are brought into a clean pen near the spring house; at day-break, their udders are washed with plenty of water and wiped with a clean towel quite dry. Their milk is then drawn into a *tin* pail that has been cleansed as the pans were. The milk is then strained through a perfectly clean muslin strainer into the pans and placed in the spring house; the same process is to be gone through at night, the next morning and evening, which will make four milkings;—on the next morning, the whole of the contents of the pans, *milk and cream unskimmed*, is thrown into a churn, (this churn is one of the common barrel kind, it has been rinsed out with boiling water, with about ¼ of a peck of *hickory* ashes and *live* coals taken directly from a burning fire; this was stirred about for some time by turning the crank—after which the ashes and water were thrown out and the churn rinsed several times with boiling water;) the cows are then to be washed and milked as before, and *this* milk strained and poured warm into the churn,—the operation of churning is then commenced; it must be performed very, very slowly; the tenacity and hardiness of the butter, depends entirely upon slowness in churning, to produce a first rate article; it should take at least 3 hours; when the butter has thoroughly come, it should be collected together with a clean wooden ladle and laid upon a clean linen cloth, spread out as flat as possible and not more then two inches thick, then take a clean coarse cotton bag, large enough to hold a half peck or more, fill it with ice, and with a mallet smash it down flat, and about four inches thick; upon this, place the linen cloth with the butter on top, let it remain until quite hard, then place it if possible, upon a clean white marble slab, add very finely pulverized salt to taste, and then work out the butter milk with the wooden spoon or ladle, spreading the butter flat again and again, and sopping up the butter milk with the linen cloth. This operation must also be performed very slowly; when entirely divested of all butter milk, make it up in forms of pounds or half pounds.

I am well aware that all this is very troublesome, but what good thing can we have in this world without care and attention?

As regards the best kind of cows, I am sorry to differ with most of my Agricultural friends—inasmuch as that, after an experience of more than twenty years, I find that the beautiful and stately Durhams, do not produce butter or cream to compare at all in quality with the humble, and I must admit, very mis-shapen and ugly Alderneys. I have had no personal knowledge of Devons or Ayrshires, never having owned one. My Alderneys were imported some years ago by Mr. Sarchette, from the Island of Guernsey,—a different animal altogether from the English Alderney, or rather from the Alderneys that have been imported from England. I have frequently had sweet cream upon my table from these Alderneys, so thick or rich, or whatever you please to call it, that it could not be poured from a small mouthed pitcher without the aid of a spoon. The milk of one good cow of this breed, will impart a most beautiful yellow color to the milk of four or five cows; they are exceedingly hardy, and stand our climate better than any other imported breed. Should you deem this communication of sufficient interest to publish it, please correct any inaccuracies, as I have not time to write it over.

I am very truly yours,

PHILIP PHYSICK.

N. B. New milk is the most effectual absorbent of sulphuretted hydrogen gas, "et id omne genus" that I am acquainted with, which can be added to old milk and cream for the purpose of purifying it without injury to the butter; this is my reason for adding the last milking quite warm from the cows to the old milk in the churn—I do not require my people to skim our milk, because it is a waste of time, for one reason, and for another, because I think the milk washes all offensive matter out of the butter; besides the butter milk is sweet and not sour as is usual, for I maintain that perfectly pure and sweet butter (let the test be a chemical one,) cannot be made from sour cream.

ESSAY ON THE TEMPERATURE OF THE ANIMAL AND VEGETABLE KINGDOM.

To the Editor of the American Farmer:

Of all subjects discussed by writers on Organic Chemistry, vital heat is one of the most familiar, but least satisfactory to my mind. I am aware how easy it is to dispose of this topic by stating the cause to be identical with that which signalizes every other chemical process in which oxygen gas is primarily concerned. Some authors however, admit that there are other resources in the economy, but by many the respiratory apparatus is still regarded as the furnace par excellence; this latter opinion having been called in question, the burden of the Schools at the present day is "a conversion of the tissues in situ vel in transitu into carbonic acid, and other oxidized products." Granting that the soft textures of the body, and the organizable matter in the circulation, are all sooner or later, reduced to simpler combinations, and removed as effete, yet the proposition has not been proved, that such chemico-vital transformations engender Caloric as a direct consequence. My own conviction is, that whether heat or its opposite supervene, depends upon the capacity of the resultant compounds. I consider the materials of the Universe, in their various changes and chances, to liberate Caloric under one set of conditions, and Electricity under another: for instance, if matter is condensed, it necessarily gives up a portion of its Caloric of expansion; if matter is extended in space, it necessarily gives up a portion of its Electricity of tension; so that the volume and weight of an atom or congeries of atoms, have the closest relation. When fresh matter is laid down, whether in animals or vegetables, the temperature rises; when it changes its

form and is removed, electricity developes itself. Now it is found by analysis that the food of animals is constituted of two distinct kinds, (and I might say the same of vegetables) one evidently intended for the formation or reparation of tissues, (elements of nutrition,) the other, say the followers of Liebig, for the support of heat, (elements of respiration.) I think it would be difficult for them to demonstrate what sustains the synergic and sympathetic functions of hybernating animals for several months in succession. My answer would be, that it is the adipose tissue which they accumulate by proper diet, guided as they are, by the same instinct which actuates bees in laying up a store of honey for a similar purpose. The nervous centres of involuntary motion are thereby enabled to fulfil the necessary offices of the body independently of that portion of the brain which constitutes the will. The exercise however of a function requires not merely the disintegration and expulsion of certain materials for its performance, but the composition and appropriation of others to invigorate organs if unduly exerted: hence, we find that the muscular tissue is absorbed from the members of voluntary movement in consequence of non-use, and are surrendered or transferred to parts essential to the continuance of life; so that when the animals rouse themselves in the spring, their internal viscera are in good condition. Liebig in a recent work writes thus: "the first effects of starvation is the disappearance of fat: its carbon and hydrogen have been given off through the skin and lungs in the form of oxidized products. It is obvious, that they have served to support respiration. In the case of a starving man, 32½ oz. of oxygen enter the system daily, and are given out again in combination with a part of his body. According to Martell a fat pig overwhelmed in a slope of earth, lived 160 days without food, and was found to have diminished in weight more than 120 lbs." These few lines appear to me the strongest argument in my favor; for of what use was the caloric produced by the combustion of certain tissues to the starving man, unless he had been exposed to inclement weather, of which circumstance we are not informed. Another instance is mentioned of a man who could not swallow. Now both these men might perhaps have warmed themselves artificially, but whence could they obtain the nervous power to prolong the movements of life? The pig found subsistence within himself; the little oxygen which he managed to inspire, being sufficient for the least possible innervation, compatible with vitality. Need I say that a broad chest is one of the best points in a hard working horse or racer—a test of strength well understood by the jockey, who never forgets to curry him both night and morning with decided advantage. Would this be the case if oxygen consumed the limbs if not the very vitals of the beast? Perhaps the most efficient respiratory apparatus is possessed by birds of long flight; their temperature is undoubtedly high in proportion: but how careful are they to provide themselves with power by laying in a good stock of provender. Were their fat expended in kindling heat merely instead of collaborating electricity, we might as well expect steam engines constructed for heating purposes, instead of locomotive, &c. If caloric, by the expansion of matter, causes movement of particles or masses in a centrifugal direction, electricity by the contraction of matter promotes an opposite or centripetal tendency. Muscles contract in obedience to the nervous centres, and the tissues generally are indebted for their elasticity and tension to the same imponderable element; whereas caloric expands the extreme textures and vessels, in order to counteract its antagonist and preserve an equilibrium of forces in the economy.

"The true cause of death in all cases," writes Liebig, "is the respiratory process, that is, the action of the atmosphere. The flame is extinguished because the oil is consumed." Yes; the vital spark goes out and the machinery stops, when fatty matter or its analogues are no longer available. "Respiration," he continues, "is the falling weight which keeps the clock in motion. The inspirations and expirations are the strokes of the pendulum which regulate it." I agree with him: but observe that he seems to keep out of view in this passage what he in former parts of his treatise laid so much stress upon, viz: calorification. It may be suggested that he wishes us to assume a certain temperature of the body as essential for the force of life to act its part in the drama; and moreover, that his elements of respiration are meant to protect the tissues and organs, (the lungs among the rest) from being decomposed. But how strangely does his language accord with my premises; as in another paragraph where he states, "all vital activity arises from the mutual action of the oxygen of the air and elements of food," precisely the words which I should have used in a different sense, or rather with a different object. He subsequently enters into a nice calculation of how much heat is elaborated from given amounts of carbon, in order to explain the constant temperature of the body as well as the evaporation from the skin and lungs. A question here may be raised—is it the heat liberated which causes pulmonary exhalations, and more especially carbonic acid to leave the oxide of iron; or is it the constantly new relation which exists between the materials composing the circulation and the external air; in other words, is it a forced state of the elastic fluids within us, or rather a natural and direct result of a want of equilibrium between the respective parties? A degree of warmth may be partially attained by the primary union of oxygen with the blood globules, but it should be remembered, that this is a progressive, not retrograde chemical movement—it is a step in the direction of life, and by no means in harmony with Liebig's notion of the destructive nature of oxygen and the generation of caloric, by the slow combustion of living parts. Besides, it is more than probable, that oxygen gas when it penetrates membranes, separating it from the constituents of the blood, is condensed, perhaps assumes a liquid consistence: or it may be that the evaporation from the skin and lungs, or the escape of carbonic acid gas may compensate for even this possible rise of temperature, by absorbing any free caloric, while they at the same time surrender more than an equivalent of their combined electricity. To those familiar with Liebig's works, his line of argument may appear to be perverted from its strict bearing, in order to establish a more favorable basis for my own; we entertain opposite theories, and perhaps interpret facts accordingly; but it is worthy of note, how nearly we approach each other from opposite quarters, without the possibility of submitting to a compromise of principles.

Vegetative life is very active in young animals—more matter is laid down than is taken up. Under these circumstances, how easy is it to satisfy the mind by supposing that there is far more matter introduced and consumed in the young than in the old—that hence their temperature and vital movements correspond; and further, that the amount deposited is greater than what is removed because the oxida-

tion of what Liebig calls elements of respiration, produces free electricity sufficient to assimilate and retain as part and parcel of the solids, the elements of nutrition in the blood without recourse to the tissues themselves, as in the case with elderly persons who gradually decrease in size and weight. Mr. Ansell, one of Liebig's ablest commentators, expresses himself to this effect in the London Lancet. "All mechanical efforts in the living animal are dependent on a change of form and structure in the substance of living parts, the amount of which change corresponds with the force consumed in the motions performed. As an immediate effect of motion, a quantity of muscular fibre proportional to the force employed loses its vitality, a rapid change of matter determining a greater amount of mechanical force, and conversely. Living parts also lose their capacity of growth and power of resistance to external causes of change, by the expenditure of the moving force. Hence we shall find in future parts of our enquiry, that the sum of the effects of motion is equivalent to the quantity of the living tissue which has become oxidized, and also to the amount of nitrogen in the urine." I cannot subscribe to this doctrine. The proper exercise of an organ or part of an organ, instead of diminishing, increases its bulk, and consequently its means of execution and faculty of resistance, because the concentration of nervous energy, there displayed, determines the progress of fluid matter towards and its precipitation within them. If a muscle be overworked, that is, exerted beyond the period when fresh materials are available, and the nervous centres (cranial and vertebral) competent to second local efforts, less resistance being now offered to the absorbents, waste commences. I am not disposed to believe that the breaking down of the tissues is so constant an occurrence as supposed, and much less that every muscular and nervous exertion ensures a loss of substance as long as the blood will suffice for a moderate supply of electricity. The excrements of a young healthy person certainly contain nitrogenized debris derived perhaps not from the tissues at all, (for the latter may be actually gaining instead of losing,) but from the food daily introduced into his blood vessels. While living parts are in the full enjoyment of health, oxygen can make no ravages upon them; it is after they have lost their tone in some way that this gas may possibly disintegrate them, or what perhaps is nearer the truth, after they have re-entered the circulation through the lymphatics, and then only when other materials more easily decomposed are comparatively deficient, such for instance, as biliary or fatty matters, &c.

In the extreme textures we locate those molecular changes which convert the arterial into venous blood; there the red-globules assume a dark color by giving up their oxygen to any compounds ready and willing to accept it; there also or at least in the capillaries by the developement of electricity in the foregoing process, white globules are formed from the albumen dissolved in the serum which would necessarily liberate caloric. Were I to indulge in speculation, I should argue the two imponderables which rule or ruin us, were developed contemporaneously at the incipient stage of our existence, and from sources over which we could have had no possible control. I repeat that they were originally coeval and independent, and yet they subsequently present the phenomena of reciprocal cause and effect. Let us examine this matter more closely and we find that at the very first of life, the female germ becomes swollen from the excitement of heat; whereas, the semen masculinum is oppositely excited, (by electricity I should contend) and by its union or contact with the germ quickens it and renders it competent to attract fresh matter and assimilate it. The male would seem to impart a nervous character to the offspring, the mother probably providing the substratum of its constitution. This is the humble commencement of every man's eventful history. What a wonderful adaptation of the ponderable and imponderable elements, and how impressive is the contemplation of the concentrated forces thus harmoniously operating upon organizable matter, and producing independent existences. In like manner the pollen of phanerogamous plants in due season becomes charged with a force capable of impregnating the germs within the flowers, and seeds are progressively evolved until other conditions are requisite for their further advancement. I doubt not but that future enquiries into the arcana of life will determine more satisfactorily, what now is but conjecture, respecting the electrical condition of the pollen and its relation to that grand source from which it borrows its fructifying influence, viz. the Sun. As if to establish the rank of caloric upon an equality with that of its antagonist and coadjutor, electricity, heat is the spirit-stirring agent in the second start of seeds, as it is in eggs that have been laid but whose vegetative functions are temporarily suspended.

The food of white-blooded animals is scanty, and their temperature is low; it may indeed be surmised by way of objection that their consumption of oxygen is small, and that their excrements correspond: but surely doubts may be entertained as to which of these events takes precedence in point of time, and I beg to take the benefit of these doubts as long as I can defend and fortify my position by redoubts, as tenable as those of my opponent. The natural effects of normal excretions is to renovate the system in general, and the respective organs in particular, not merely by the removal of foreign or superfluous ingredients, but by an actual surrender of their combined or latent electricity. I admit that excessive perspiration, during hard labor or even night-sweats, during chronic internal diseases, reduce the system, but their intention is good, and according to the old saying exceptions prove the rule.—Again, on some occasions, as in slight fevers, there may be extraordinary perspiration as well as an excess of bile and fæcal discharges, or the urine may be dark-coloured and loaded with sediment, but here is obvious debility, arising from the ravages made upon the tissues themselves by the absorbents during the efforts of nature to rally her reserved forces, and while the digestive functions are unequal to the task of replenishing the lacteals and thoracic duct. If on the other hand, the skin be impervious and dry, with most of the other secretory organs at fault, a morbid sensation of heat might be anticipated from the excitement of the nervous centres, upon which the blood would regurgitate without an equivalent tonic effect produced by any actual decomposition of matter, beyond pulmonary exhalations, which can never intermit in the higher animals without the cessation of life; and what is remarkable, relief is in a great degree restored by a restoration of the other functions. The office of the kidneys appears to be principally to render soluble under a new form and eliminate from the current of red-blood, certain compounds which contain nitrogen in excess; that of the liver to screen from the portal circle of black blood any temporary redundancy of carbon. Choleic acid may be and is generally reabsorbed after digestion; in its composi-

tion we recognise an intermediate character of aliment rendering the ultimate change of its carbonaceous constituents into carbonic acid, &c., less direct, but more easy and advantageous. From the extreme prostration attending congestions of the liver, I am sometimes inclined to the opinion, that it is through the medium of that viscus especially, that the hydrocarburets assume a form most capable of combining with oxygen, although I do not deny the possibility of their eremacausis in other shapes and under other circumstances.

One of the best tests to determine the falsity of my premises, if they be false, may be derived from the eggs of birds. In vivaparous animals the fœtus grows on the same principle as its parent, the vessels of the latter bringing to and carrying away from the former through the intervention of the placenta, all materials suitable or unsuitable to its condition. But in the case of the egg, which like the seeds of vegetables, is entirely removed from the parental connection, we can study effects to the best advantage; for with the exception of oxygen, nothing else interferes with the regular train of developement during incubation. First then, there is the white and yellow albumen, the latter tinctured by some fat in which cholesterine and iron may be detected. "The fat of the yolk," says Liebig, "may have contributed to the formation of the nerves and brain," but he does not hint at any elements of respiration, although much is said of the elements of nutrition. Now if carbonic acid gas, the vapor of water and perhaps nitrogen, in some form do not transpire through the pores of the shell, pari passu with the inspiration of oxygen, or even if the weight of the egg taken collectively, does not actually decrease with the growth of the chick, then it will be time for your correspondent to review the whole ground, if not abandon it. But the parent provides heat for the chick in ovo, whereas my doctrine would appear to lay too much stress upon the formation of the blood-globules and deposition of the young tissues. Be it so; we should however remember, that the ovum of viviparous animals likewise is partly indebted to the walls and liquors of the womb for its temperature—that the process of growth in both ova is but slow, perhaps too slow for the steady maintenance of adequate heat; for that usually afforded by the exercise of the voluntary functions in after-life here fails. Even long after their escape from the shell, the young birds instinctively seek the warmth and protection of their parent's wings, a warmth as genial to them no doubt as raiment is to the sucking babe: for although both might and are obliged in many instances, to buffet the winds and weather without such comforts, yet the trial is a severe one, and serves to show that external heat in addition to that which is generated within us is not merely an artificial conceit, but has become a second nature. Should this concession furnish my opponents a reason for the small amount of hydrocarbonaceous matter in the ovum, and while thus putting into their hands a weapon of defence, should I also seem to supply them with another for offence, by showing the indispensable qualities of caloric, I beg to remark, that its importance is not denied, but solely the prominent place assigned to it to the disparagement of its helpmate, electricity. I might as well attempt to prove that the tone produced by the electric fluid, developed within us is all-sufficient without the external tension of the circumambient air, or without the electro-thermal influence of the sun itself. But who can fail to observe, that in the germs of animals and vegetables, there is obviously wanting in the first instance, as well as subsequently at every moment of active life, a force such as we can appreciate and understand better than a "vis vitæ,"—one that we can reconcile with other phenomena in nature, a force to consummate the essential qualifications of animate bodies, by giving a substantial form to liquid materials—a force as palpable as is caloric itself within its proper domain? Such a force is electricity, and such a force is eliminated when oxygen combines with hydrocarburets, and still more with nitrogenized compounds in which carbon and hydrogen enter, the latter without an attending equivalent of oxygen. At any rate the evolution of the chick in ovo, demonstrates that the movements of organic life do not absolutely require the expenditure of living parts corresponding with vegetative activity, a fact which Liebig concedes to the detriment of his main argument. The chemicovital metamorphoses which are more obvious in vegetable ova, will account for a force available for their developement, and if I am not greatly mistaken, the amount of egesta from full-grown plants, and plants in the decline of life will answer to the amount of ingesta and of free caloric. It is contended that the heat manifested during the germination of seeds arises from the oxygenation of diastase, where starch is converted into sugar and ultimately into carbonic acid, which is appropriated: but there is no proof for either of these plausible assertions; whereas, it is indisputable that the germ increases in bulk at the expense of the other portions of the seed which are dissolved, and that heat must ensue from their precipitation in place. It is also insisted that in whatever way oxygen combines with carbon, it must liberate the same amount of caloric I have not been able to discover sufficient evidence for this dogma. Does it make no difference whether the materials exist in a gaseous liquid or solid condition? Is the oxygen of the atmosphere in the same predicament as when combined with proteine or iron in the circulation? Is the carbon of diamond, of bitumen, of carburetted hydrogen, of muscular tissue, or of the blood globule identical in every respect, physically or dynamically considered? In many of the elements of respiration, (or as I would prefer to call them elements of innervation,) it is the carbon alone which becomes oxidized, the hydrogen being already engaged with oxygen in the equivalent proportions; yet the change of form which they assume would liberate electricity just as does the vapour of water, when it escapes from the boiler of a steam-engine, or the gaseous and vaporiform effluvia from active volcanoes. Such compounds are the more valuable, inasmuch as they maintain steadily and equably the animal forces, acting like a balance wheel to a powerful but eccentric machinery.

According to Liebig "the distinguishing character of vegetable life is a continued passage of matter from a state of motion to that of static equilibrium. While a plant lives we cannot perceive any cessation in its growth—no part of an organ diminishes in size, no waste occurs." I doubt all this: a plant like every other living thing, after attaining its full growth and perfect condition, begins to decline in its own way. It yields to depressing agencies, but in a less degree than do animals, because its relation to the external world; in other words, its functions are less numerous, and make less demands upon its vital energies—the nervous system does not exist. The tree sheds its leaves periodically, as animals do their hair, or birds their feathers; the winds commit havoc upon its branches, and old age or disease, incapacitates them from supplying the deficiency. The adult re-

tains its general bulk, but it will vary in weight, according to circumstances, such as an increase or decrease of food, &c.; the alburnum like the osseous system may not lose much if any of its hard texture, but without especial reference to the fecula, resins, &c. contained within its meshes and analogous to the gelatine and marrow of bones, the other cellular departments of the tree certainly shrink from their fair proportions. The secretions and excretions may proceed from the absorption and metamorphoses of the tissues under certain conditions, and to an extent commensurate with the few and low manifestations of vital phenomena. The sap undoubtedly undergoes the chemical changes claimed for it, and I am of opinion, that previous to the season of efflorescence, and more particularly during the night, its nitrogenized constituents are reduced to simpler compounds, and hence in part the elimination of carbonic acid and various characteristic exhalations, a process very similar to that which originates urea, perspiratory matter and carbonic acid from excess of albumen in the circulation of animals. In fact, the compounds of nitrogen referred to, may be considered analogous to Liebig's elements of respiration. As a general rule, parts subject to the laws of chemico-vital dynamics yield to an inexorable destiny, a destiny which ultimately assigns a limit to the existence of every thing endowed with life. When matter ceases to be expelled, matter ceases to enter in consequence, and when the digestive organs of animals and vegetables begin to lose from any cause, their normal tone and permeability, matter must of necessity cease to fulfil the requirements of animation. The most recent researches of physiologists render it certain that plants digest their food, and respire as do animals—now if the respiratory function in animals is intended to keep them warm, and this warmth arises from the oxidation of tissues and certain ingredients in the blood, how can authors reconcile the phenomena, with those presented by the vegetable kingdom, without admitting inadequate or irregular effects produced in the latter from identical causes. Whereas, if it be true that oxygen forms an important item in the sap and sustains an independent part in the process of growth—if it be also undeniable that respiration is more or less constant, and digestion accords with the amount of aliment, but little remains to be proved, in order to satisfy an impartial mind that any differences which exist are merely in degree—that their object is the same. Light, a compound of electricity and caloric, merely aids the natural efforts in promoting growth; so that upon the whole, I cannot recognise any known power, whereby extraneous substances can be appropriated by an organized body, without a contemporaneous loss of some kind, corresponding with the gain, the latter being effected principally at the expense of the former: just as I cannot comprehend the solidification of the earth's crust, but by the liquefaction of certain materials, and by the aeration of others; in other words, by a transfer of caloric from the former to the latter, and of electricity from the latter to the former. This may be regarded a fundamental law of nature for the equilibrium of organic and inorganic forces, and the distribution of matter. It has been surmised that the nodules of flint found in the cretaceous formation, were formed by the silliceous exuviæ of microscopic creatures, concentrating upon a piece of decaying organic matter: nodules also of ironstone in the earlier rocks, seem to have enclosed in many instances, the pellets of extinct animals, (coprolites.) Does not this circumstance afford additional ground for believing that the reduction of organic matter into simpler combinations is attended with the generation of a force which attracts and condenses organic matter favorably disposed in its vicinity?

The following coincidences are offered for the consideration of naturalists. Grain of all kinds grown in our most northern states, is represented to possess a larger proportion of gluten than that of the southern, and a smaller amount of starch in equal weights. Its coat is also thicker, as if to protect it from the air which is denser, and contains more oxygen in a square foot. The nitrogenous constituents of seeds, perform the same duty as the hydro-carbonaceous in animal ova: electricity is provided by them to fix the nutritive elements in both ova, and inasmuch as the sun in northern latitudes does not aid vegetation to the same extent, as at or near the tropics, an ample store of gluten, albumen and casseine, would seem to be an indispensable substitute, liberating moreover, as they do, more of the elective fluid from equal weights. In Florida, the lower parts of Alabama, Louisiana, and Texas, the inhabitants possess more of the nervous temperament, while in the intermediate states, of N. and S. Carolina, Virginia, Tennessee and Kentucky, the proportion of the nitrogenous and non-nitrogenous elements are more nearly balanced, and the cerealia attain the highest perfection. The people are more generally of a mixed character, viz: sanguine-nervous-bilious: in the more northern states, the population is inclined to be sanguine. It will strike the reader that such a natural disposition of the staff of life, at once indicates the uses to which the respective ingredients are subservient. Starch abounds more in southern corn, &c., it is said to favour innervation not calorification: gluten predominates in more northern flour; it is eminently adapted to the formation of muscle and arterial blood, thereby promoting warmth and the faculties for exercise in a climate which requires adventitious resources. The potatoe may seem an exception to the rule as it thrives best at the north and abounds in starch: but the germs of the tuber are provided with fecula as the polar bear's with grease, partly to protect them against cold, by their non-conducting qualities. Indeed, when the number of germs in a tuber is considered, the objection loses much of its force; especially when we reflect that there are many esculents of the same family, in warm latitudes as remarkable for the fecula which they contain. I can vouch from my own experience, for the excellence of bread made in the south of Europe, and opposite coast of Africa. In the provinces of Andalusia, and Extremadura, bread in its simplest condition is a delicacy—it is sweeter, and more highly flavoured than what falls to the lot of the English and French peasantry. I believe it is in some degree indebted to phosphorus, which is known to exist in those regions, associated with lime and other bases.

There are a few points on which I lay some stress, but of which physiologists will dispute the correctness. I consider the first attribute of living matter to attract and assimilate other materials in immediate contact, and which approach it in composition, or admit of a chemical change by a well-defined transition: so that when a leaf or the epidermis or the spongioles of the roots find substances suited to their wants and capacity within their reach, they appropriate them. Inasmuch as cellular textures, which present themselves to the external world, are of the simplest character compatible with independent existence, the change is not so great as we might at first suppose, particularly if the air in the neighbor-

hood of dwellings, be charged with animal and vegetable effluvia, of a semi-decomposed consistence, and if the soil or humic acid be considered a semi-organic compound, and the result of partial disintegration, corresponding in these respects with the bile of animals or choleic acid. I boldly advance the doctrine, that the food of living creatures, instead of being absorbed, as mere liquids are, directly by the vessels, and by them carried through the whole system in the shape of sap or blood, becomes in the first instance, deposited and organized—that by a change of condition, (elctrical as I have elsewhere contended) these organic deposits are removed from their original settlement for secondary purposes in the economy, such as the construction of neurine, fibrine, lignin, &c. If it is electricity which causes matter to cohere, and tends permanently to consolidate it or temporarily to contract it, we may suppose that the absence of the sun or sleep might suffice to dislodge the newly-laid accretions of the previous day. On the same principle the proteinized matter of our food is first monopolized by the nervous and villous coats of the alimentary canal, and subsequently enters into the lacteals after resuming its plastic character, in obedience to periodical or accidental causes of nervous relaxation. Of all parts, the valvulæ conniventes are perhaps among the most highly endowed with nerves, and consequently most sensitive to exaggerations or abberrations of nervous force, at one time offering unusual resistance to chemical agents, and again being particularly subject to their control. As in the lungs, we here find two constant sources of caloric, for the nutrient arteries are also engaged in the service, and the sensation of warmth is radiated over the whole body, wherever the sympathetic nerves are distributed, and arterial conduits propel their genial contents. There are in the higher animals two sets of returning vessels, lymphatics and veins—the latter carrying back the red-globules of the arterial blood, and frequently anastomosing with the arterial capillaries—the lymphatics appear to be receptacles for the white blood, and connect more directly with the lungs and heart, as do the veins, (portal circle) with the liver and spleen. The object is principally to alter the blood, and prepare it for future usefulness. It occurs to me that the various causes usually assigned for the circulation of the blood, may all be referred to modifications of the same elemental forces; one of which contracts and the other expands matter, originating in fact, centrifugal and centripetal movements of fluids, in connection with solids, eminently endowed with elasticity and contractility. But there is one application which has hitherto passed unnoticed, although its practical importance in hydraulics has been acknowledged. I allude to the introduction of aeriform into currents of liquid substances. The artificial compression and subsequent expansions of free gases in ascending pipes, finds a counterpart in the natural combination of gases with vital fluids in organic tubes—the tendency to a vaccuum occasioned by the heart acting as a central forcing pump, causes a disposition on the part of the elastic fluids forming a portion of the circulation to leave their connection with one set of compounds, and attach themselves to others, which by the comparative loss of cohesion, or even chemical attraction, are left less able to resist their approaches, and a more intimate relation with them: hence, the reason why living tissues are predisposed, first, to submit to the absorbents, and afterwards to unite with oxygen at the moment of its divorce from former associates.

Fever and inflammation properly considered, are restorative processes—efforts of nature to support and repair disordered or weakened functions and tissues of the body. Circumstances may render formidable what is otherwise harmless; nay, even transform a virtue into a vice; in the same way salutory provisions of the economy may prove the cause of death without affecting the argument. The secretions of an organ are often competent to discuss congestions of the parenchyma, when its vessels are engorged with venous blood, and the tone of the parts reduced below par; but if the nervous centres, (especially the cardiac plexus) are called into action, so as to provoke the heart and arteries to come to the rescue of the feebly-resisting viscus in an overbearing spirit, the remedy is worse than the disease. The organ becomes still further oppressed with blood, and no outlet being afforded to the pent-up fluids, mortification is the last resource in order to rid the system of accumulated evils, unless timely venesection or counter-irritation be judiciously applied. Fever diffuses the excitement, and by dividing the forces of the enemy, or rather not allowing them to concentrate, essays to conquer them. But as I have already remarked, if it fails in its object, it does more harm than good by leaving the general system less liable to cope with disease. What is the object of bleeding, when the excitement runs too high? Why is water freely given to drink, or why do we try to starve out the fever? Why is a precisely opposite treatment resorted to in cases of sub-inflammation, in which there is not sufficient tone in the parts to sustain themselves, and consequently stimulants, astringents or external bandages are appropriate? The legitimate deduction from these facts justifies me in declaring that in the former class or classes, by the local or general abstraction of blood by its dilution or alteration, the oxygen-carriers being reduced in number, cannot overfeed the fever by causing such a rapid and unfortunate precipitation of solid materials, either within the diseased organ or its corresponding nervous centre, as to incapacitate them irretrievably. We choose the least of two evils, and by exhausting the patient's strength for a time, and to a certain extent, we wait for a favorable opportunity to replenish the vessels and recruit his forces by tonics and nutritive diet. Oxygen is really a friend; by its combination with certain bases in the blood, it may cause the fluid materials to assume a solid consistence, beneficially in most cases, although it must be confessed, injuriously in others. Observe the poor consumptive, how he pants for oxygen to relieve his distresses—one lung has perhaps been decomposed and totally unfitted for the task of aerating the fluids: would not a deep full inspiration and expiration, were it possible, at once impart a sense of improvement to his whole frame? Well might the older chemists term oxygen vital air; although in the first instance, it is the formation of carbonic acid or other effete matters in the extreme textures causing local deposits, or secondly, their final elimination from the lungs, skin, &c., causing general invigoration, which we are called upon to admire. Should our atmosphere by one change in the present relation of things, become more highly charged with carbonic acid, the proportions of gases would disarrange the organic forces dependent upon nervous influence to such an extent, as to annihilate probably, all land animals, and reinstate the geological period of the coal formation, when neither the mammalia nor birds, nor reptiles existed on the face of the earth, or breathed the breath of life. The appearance of distinct races of animals, whether hot or cold,

blooded, at different periods, has induced many to refer their temperature to the oxygen of the air, as the proximate and immediate cause of those distinctions. It however, merely predisposes the accretion of certain particles of organizable matter by disintegrating others. Were it indeed the direct cause, the range of vital heat would be likely to fluctuate much more than it does; whereas, by a wholesome provision of nature, food much beyond the welfare of the economy, is either at once rejected by the stomach, or passes away through the intestines without being digested—or if digested, and introduced into the general current, oppresses the nervous system with the utter loss of appetite. Again, if calorification proceeded from the combustion of the solids, how easy would it be by repeated inspirations of pure oxygen, not merely to kindle the sensation of fever with a hurried pulse, but to raise unequivocally the temperature of the fluids themselves On the other hand, the measure of heat being determined by the nervous energy available for assimilation, &c. we might a priori expect that it would regulate itself. For this reason, we can form a tolerable estimate how far articles of food have answered the purpose of sustaining vital heat by reference to the amount and nature of the ingesta and ejesta, but we may still more confidently appeal to them for the ascertainment of force in the abstract within a given time, although it might be more difficult to discriminate between the formation of muscular fibre on which the force operates, of neurine from which the force originates, and by which it is conducted, or of blood-globules devoted to the exercise of the nervous and muscular functions themselves, allowance being made for the weight of the body before and after the experiment, as well as disturbing causes.

The drunkard when he empties the glass, looks not for caloric at its bottom, but rather stimulation as soon as the grateful draught reaches his stomach, or is decomposed in the circulation. A rise of temperature would be a secondary symptom dependent on the former. How many persons addicted to the use of opium or even tobacco, are at length obliged to resort to it for the power to exert their ordinary faculties: by stimulating the heart and arteries to renewed vigor, these articles dissipate the malaise of the internal viscera, and diffuse the blood more equably. By the escape of electricity, during their oxidation, they probably precipitate organic matter held in solution, and thus temporarily, and almost instantaneously, reinforce the energies of the system; but alas, they gradually ruin the digestive functions by repeated indulgence; they first operate upon the coats of the stomach and intestines, and thus exhaust or thicken them according to constitutional tendencies. When dogs or horses exert themselves, they inhale rapidly the air, not because they crave more warmth, but to give them renewed strength. This fact is generally explained by saying that the presence of too much carbonic acid in the blood is detrimental, and consequently, that the venous blood must be aerated before it can render good service; but it is still a matter of doubt with some analysts, whether any free carbonic acid can be found there. That gas is one of the most easily detected, if it existed, and any which may have been recognized, might have resulted from the experiment itself. In an atmosphere surcharged with it, we may be unpleasantly and fatally affected, but the chemist knows full well, that the proportions of gases must be taken into account before we can estimate either their elimination or absorption.

In cold weather children run about, probably they would say to keep themselves warm; indeed this may be their apparent motive and real effect; but does not their appetite for food sympathise with their movements, and do not their exuberant spirits and well-developed organs of locomotion prompt them? If a person faints, do we hasten to communicate heat to his prostrated frame; do we not try to restore him by cool fresh air, evaporating lotions or hartshorn? Do we not give him brandy inwardly, or if it arise from hunger, do we not present him something to eat? The limbs will naturally refuse to do their duty, if not only a part of their substance is absorbed, but nervous influence is withheld from the want of a customary share of aliment. There is a mode adopted in Egypt for preparing poultry, which serves to illustrate portions of my argument. In order to render the flesh of a fowl delicate, they intoxicate it with alcohol about an hour before it is slaughtered; the blood is speedily exhausted of its nutritious elements, which are assimilated, the bird remaining meanwhile in a state of unconsciousness; as long as the elements of innervation subserve the purpose of precipitating albumen or fibrin, and the voluntary functions of motion, thought, &c., are dormant, the vegetative are more active. The same effect is measurably attained during the sleep of animals; in the morning there is or ought to be a good appetite to replenish the fluids, and save the solids from absorption. When an animal in full health is forcibly deprived of life, the extraordinary excitement of the nervous centres, produces a fixed contraction of the limbs, and the body continues to exhibit in death, the last spasmodic struggles of life; the inanimate fibres also acquire a tough and unyielding consistence from the rapid and excessive deposition of fibrin, and the exaggeration of nervous influence.

Can it be possible, that the physician selects heating remedies for his debilitated patients, and yet are not most of his stimulants and tonics even those which contain nitrogen, such as by their combination with oxygen, generate carbonic acid gas? Some indeed, of that class of medicines, are said to produce nervous excitement without any sensible increase of warmth; others are indirectly calefacient by imparting energy to the circulating apparatus. It is even doubted by many, whether fever heat is really above the regular standard of healthy blood. I believe that it is slightly so, as on the other hand, that the blood of persons with a lymphatic temperament, may fall below the average. The lungs undoubtedly exert themselves, as if to compensate for the loss of other outlets, but according to Hunter, the blood itself and the heat of the body, as tested by the thermometer, is not abnormal. And yet no one can doubt the fact, that an unusual sensation of heat is perceptible on the surface of persons laboring under a paroxysm of fever, and that the breath of other patients is remarkably cool. In fact, the caloric engendered within the engorged vessels of the skin, instead of being carried off insensibly by perspiration, is conducted either by the hand when applied, or by the usual medium of the air which becomes surcharged.

The practical importance which attaches to this subject, consists in the application of non-nitrogenous articles of food to purposes more essential than those usually assigned them. The valetudinarian in search of diet, which will act as a restorative, without producing a recurrrence of fever or over excitement, selects the very substances least adapted to his condition, according to the modern doctrine. Sago, tapi-

oca, arrow root, &c., instead of feeding inflammation, help to subdue it at a certain stage, by giving tone to the nerves. It is well known by graziers, that grain is heating, and such articles as grass or turnips, cooling; furthermore, that warm sheds in winter will economise strong food. It is because the proteinized elements are more abundant in the cerealia, and afford warmth by being deposited, whereas, food in which carbon predominates, sustains for the most part the nervous functions, except so far as they liberate calorie, by being precipitated as fat, which is a bad conductor: and here perhaps, it is the proper place to state as the sum and substance of my argument, that no terms can adequately represent the especial office of any class of aliments; for both the azotized and non-azotized elements liberate caloric and electricity at certain times, and under certain circumstances. Let the farmer take equal weights of beans and of beets, to try the effect upon his cattle. The former provides solid flesh, the latter may be converted into fat-globules, and precipitated as adipose tissue, provided it be given with a liberal hand. Liebig alleges that "the maccaroni of the Italian and the train oil of the Greenlander, are not adventitious freaks of taste, but necessary articles fitted to administer to their comfort in those climates. The colder the region, the more combustible must their food be." I should read the latter sentence thus—"the more food of a strong nature is required." It is not the train oil alone which supports the temperature of the Greenlander, but monstrous loads of fish, flesh and fowl, which line the inner, as furs do the outer man. A large portion of Napoleon's army in Russia, were soon frozen to death under the effects of hunger and exposure, in spite of the warmth which oxygen is supposed to produce, by burning us up piecemeal. Persons constituted with a weak or small digestive apparatus, should wear flannel next the skin, and more ample clothing; invalids feel more sensibly the weather, not because they breathe less oxygen, (for their lungs may be large and sound, and their skin kept clean) but because they digest less aliment. Liebig continues thus: "A man will require less carbon when pursuing a sedentary occupation, than when he is engaged in active exercise." I am agreed to this. "Wild animals in a state of nature are seldom if ever fat:" unless a sense of security and abundance of herbage will allow them constant repose, and the narrow limits of a valley impose on them the necessity of confining their range. "The Bedouin shows with pride, his lean muscular and sinewy limbs;" certainly; either because he wears out his fat or the hydrocarbonaceous element of his blood by exercise; or because his food is of that quality and quantity, as not to admit any surplus deposits The climate forbids indulgence in animal food, save milk of all articles the best adapted to every age and condition. Fat people seldom have the nervous system very largely developed, and therefore it should not be objected, that according to my premises, such individuals ought to exhibit an active temperament; obesity follows as a penalty for listless habits, or a misfortune incident to a sedenatry occupation. It is worthy of note, that the permanent stoppage or want of particular functions, such as menstruation in females of an advanced age or emasculation in males, should be attended by an increase of fat, and yet this very circumstance is adduced by the school of Giessen, as illustrations in favor of their views. Between the tropics, it is not animal food which the natives prefer for their simple repasts, but juicy farinaceous fruits and roots, all-sufficient for their light hearts and lighter occupations. It is singular with what unanimity tea and coffee have been cherished by civilized nations as genial stimulants; a still greater refinement of taste and an instinctive love of gentle excitants has added to those beverages, cream and sugar with advantage to health; they are not so rapidly decomposed as alcohol, and consequently in warm countries, do not affect unduly the nerves. There probably is no community of men on earth, that does not indulge in some kind of artificial stimulus, and if it is not tobacco or spices, it may be opium or other drug—a proof I conceive that nature encourages the penchant, and it is for reason to regulate the appetite and guard against its abuse. The lower animals are not exempt from the same propensity.

Bolivar lived for considerable periods upon sugar, a very slight stimulant for the reason that it is already semi-oxidized, and no one can doubt, but that during his campaigns, both mind and body were in full activity. It is recorded that whole caravans in crossing the deserts of Africa have been reduced to the necessity of consuming their freight, consisting of gum exclusively. It must be confessed, that a long-continued exertion of the organs of locomotion will not allow us, for reasons formerly given, to draw too largely upon our resources, and yet the North American Indian will be satisfied during his tiresome march with roots and berries, in which there is little else than the hydrocarbonaceous elements of food; however, it would be unfortunate for a herd of buffaloes to cross his track, as he would assuredly make amends for his abstinence I know not how true it is, but alligators are said to swallow pine-knots previous to their winter sleep, and that these are his only sustenance; the climate in which these animals reside, is by no means severe, and so we will wish them pleasant dreams and easy digestion.

In the face of all these facts, the mind will naturally recur to the ordinary uses of animal fat and vegetable oils for producing light; but I am prepared to argue that the concomitant heat is not a primary effect, but results from the difficulty which electricity finds in diffusing itself as rapidly as developed during combustion. The condensation of such a bad conductor as common air, is I believe the veritable cause; nor would the assertion be disproved by presenting a good conducting medium to the flame without sensibly diminishing the heat; because no stretch of ingenuity could devise means of effectually conducting away the electric fluid from the inconceivable amount of atoms which are on every side engaged in chemical reaction. The light emitted, is one of the modes which nature has devised for carrying off the two imponderables in connection to the best advantage; as it depends upon the dynamic constitution of the molecules employed what amount of the imponderables is developed in that shape. It is not until the fluid is in excess or unable to traverse with facility, the wire which completes the voltaic circuit that ignition commences. By a superficial view of the subject, it might be supposed that during chemical and chemico-vital reaction, both imponderables are always liberated simultaneously and for identical reasons, and that all dynamic effects claimed for them might be assigned to the same source; that the very experiments to which I have alluded, would seem to countenance such a doctrine. But by granting it, I should exchange a simple, for a complicated and inexplicable rule of action; I should yield principles at the very foundation of physics, as I understand the subject, and quash by my own act and deed the ques-

tions at issue, viz: what is the distinct office of caloric, and what of electricity—whence are they derived? They are diametrically opposed to each other, but by mutual concessions harmonize together in the economy of the universe. If electricity is ever developed in the animal or vegetable faster than the nerves or tissues can dispose of it, then, and then only, may we calculate upon heat being liberated in intimate conjunction with its rival in the shape of light. Certain fishes, insects, and fungi are gifted with this peculiarity, and emit a phosphorescence, for which they are probably indebted to phosphorus in excess. From the bodies of some cachectic individuals light is said to have emanated, a light however of a very equivocal nature, and as little understood as credited by competent judges. We certainly hear of cases of spontaneous combustion from the abuse of ardent spirits, which may account for it: but the data are insufficient to base any argument upon them, either in confirmation of or in opposition to the doctrine I have advocated as the cause of vital heat.

ROBT. SERRELL WOOD.

Mount Hermon, near Washington, D. C.

MACLURA OR OSSAGE ORANGE.

To the Editor of the American Farmer:

DEAR SIR,—The article on the "Maclura," copied from the "Ohio Cultivatior" into the December No. of your "American Farmer," has brought me numerous letters of inquiry, of like import, to that presented through you, from your friend Doctor Owens, of Anne Arundel county, Md., some of which I answered direct, others lie over; but taking your suggestion, and by way of saving time, I shall make one answer do for all, through your useful and extensively read paper. This course I trust will prove perfectly satisfactory to the gentlemen to whom I have not written.

The Ossage Orange tree will grow on any soil, from stiff clay, to light sandy, and under condition, from moist, to dry, from rich, to poor—the richer the soil the more rapid will be the growth, but it will thrive pretty well on what might be termed poor land.

My plan is to plant the sets or quicks singly, in line, about 12 inches apart. Some plant double rows; should this be deemed necessary, I would advise to proceed simply thus. Plant on line, the first row 15 to 18 inches apart, then on the second line, which should be 12 inches from the first, and parallel with it, put down a plant or set opposite the spaces on the first line; a hedge thus planted, and well tended for some 5 to 6 years, would bid defiance not only to poultry and pigs, but horses and cattle. But I find 12 inches apart, on a single line, quite close enough for my purpose.

As to the question, how to procure or produce the Maclura? Those who wish to produce for themselves can proceed in two ways, either by raising from cuttings, or by seed. If from cuttings, they must purchase as many plants of the Ossage Orange from 2 to 3 years old, as will afford them a sufficiency to sprout from; the cuttings should be 2 to 3 inches in length, taken from the larger yellow roots of the plants, which if properly done will not injure the plants for setting out. The cuttings should be planted horizontally, in drills some four inches wide, and two inches deep If the planting be in the fall it might be proper to resort to frames, except south of Maryland. If in the spring, open ground will be perfectly safe, covering the cuttings with earth about 2 inches deep, not more. If sprouted in frames, or in close situations, they may be taken up the next year and transplanted in some more suitable place—when two or three years old they may be set out in hedge, making cuttings as before directed for another crop. This practice may be continued for a series of years, till the whole farm or plantation is enclosed with Maclura, and this result may be produced by the purchase of 100 to 1000 plants, which in Philadelphia will cost from 15 to 20 dollars per thousand. If seed be preferred to cuttings, resort must be had to the West, where the tree grows spontaneously in the forests, and where seed is plenty. The seed may be sown in drills or broadcast, in beds well prepared, covered from 1 to 1½ inch with finely pulverized earth or mould. When strong enough to remove from the drill or bed, proceed as in the case of sprouts from cuttings, as above directed.

As to trimming or clipping the hedge—this should be done delicately and prudently the first and second years after setting out, until the setts have attained a healthy and vigorous start, after which, they should annually or semi-annually be well headed down, to give the hedge strength and correctness. The Maclura is a tree, and when permitted to grow naturally, is an attractive object in the lawn or wood, with its deep green foliage and orange like fruit.

A word as to the "running and sprouting," which was the occasion of the article in the Cultivator. Mr. Bateham, its zealous and intelligent editor, having referred to me for the settlement of the question, as to the sprouting and running of the plant, which seems to have engaged the attention of some of his correspondents, I affirmed this propensity in the Maclura. Since my response, a question has been put to me by a gentleman in Ohio—whether the running and sprouting I had observed was not owing to the hedges I had in use being produced from cuttings instead of being raised from seed—to this I replied, that I did not think that circumstance could in any manner change the habits of the plant, but the dwarfing the tree by close planting and heading might cause it to run considerably more under ground, and sprout, than it would, were it permitted to take its natural growth upwards, for in the case of the tree growing apart, having room for its proper developement, I never discovered any sprouting. In addition to this, I have also to remark for the information of those interested in the matter in Ohio, as well as your readers in general, that however the roots may run, they would not I think sprout, unless interrupted by cutting them through with the spade or plow, in breaking up the land close to the hedge. The roots thus severed from the stock, will sprout if left embedded in the newly turned up ground. This will better account for the sprouting than the supposition of its being caused by dwarfing.

I trust this brief communication will be found pertinent and satisfactory to your correspondents, and mine, on the subject of producing the Maclura, and cultivating it into hedge.

So much has already been said on the suitableness of the Maclura for live fence, that I deem it unnecessary to recommend it further. Whether it, the Native Thorn, or any other be preferred, is not so material to me, as the unsightly post and rail, and worm Fences, that are such an eye sore to our farms and plantations. When they shall be superseded by compact, beautiful hedges, then may it be inferred, tha

the Agriculture of the country has attained to considerable perfection.

Respectfully,
Your ob't servant,
JAMES GOWEN.

Mount Airy, Philadelphia, Jan. 8th, 1847.

N. B. I forgot to remark, that I have several fine young trees of the Maclura, from which I expect an abundance of seed in a year or two—one produced some fine Oranges last season. J. G.

HORTICULTURAL.

WORK IN THE GARDEN.

Before we enter into the details of such work as may be done during this month in the Garden, it may not be inopportune for us to inquire, whether there are not some of our readers who may have failed to provide their homesteads with *gardens* suitable to their establishments. If there be any who have so failed, we would invoke them by that fraternal feeling, which each agriculturist may, and should, feel for another, to set to work with that earnestness which overcomes all difficulties, and to improve the present time to add good gardens to their respective estates. In all sincerity we tell them, that there is nothing which contributes more to the comfort of one's family, nor more to beautify and give interest to an estate, than a well arranged, and well appointed garden. While its stores of fruits and vegetable products, at all seasons, crown the festive board with the choicest delicacies, its *flowers* impart a charm which win us from the corroding reflections incident to the business of the world, and prepare us to contemplate with feelings of delight the paternal care, bestowed upon us by our Creator, in the array of floral beauties presented to our vision, to chasten our thoughts, and refine the aspirations of our hearts, with the view of teaching us to elevate our desires beyond the contracted hopes which centre on earth. And while each shall be laying out his garden, let him who may be without *shade* and *ornamental* trees about his dwelling, impress this truth upon his mind —that nothing more contributes to the health of one's residence than the protection and comfort dispensed from a few trees judiciously arranged, planted in front and around the dwelling.

With these preliminary remarks, we will proceed to specify what may be done—nay, what should be done, to ensure a supply of early vegetables.

Preparation of Hot beds. As it should be, and doubtless is, an object with every head of a family to supply that family with early vegetables, we would recommend to each who may not already have such a convenience, to erect a hot-bed on the northern border of his garden. It need not be large, as a bed three lights wide and twelve feet long will be sufficient to raise all the plants requisite for a family, of *Early Cabbages, Cauliflowers, Broccoli, Lettuce*, &c. A frame of these dimensions may be prepared at a trifling cost. The back should be as high again as the front and made to raise by hinges. The frame being made, dig out a place to sink it in the earth fill up the bottom with 9 inches of stable manure that has been forked up and turned over a day or two and left in a dry place, over this put about six inches of the soil dug out to make room for the frame; rake this well, and after it shall have settled down a day, re-rake it and sow your seeds. Of a night throw a matting over the glass, which must in *good weather* be removed each morning, when the frame should be raised a few inches each morning. Gentle watering are necessary to encourage the vegetation of the seed; but all such waterings must be done in the forenoon, but only of pleasant days when the sun is in power.

In fixing the *frames* leave say 5 inches between the back of the frame and the fence, which vacancy must be filled with horse dung, say 10 inches deep, to keep up the required heat.

Sowing of Early Peas. Select a bed with a southern exposure, manure it, dig in the manure, rake and make drills 4 feet apart 2 inches deep, sow your peas thickly, cover and press the earth gently on them. You need not fear that the frost will kill them, they are hardy and will resist its influence. We have seen them 4 inches high covered with snow without being injured. To secure a continuous supply it is best to sow portions of the bed at intervals of 10 or 14 days.

Pruning of Grape vines. Proceed without delay to prune your grape vines. Do this with a sharp knife, cut smoothly, and if the wound bleeds stop it by applying a potatoe to it, taking care to wipe the wound dry before you apply it. A thick paste made of plaster we have also seen recommended. Recollect that the wood to be cut away is the old wood, and not that made last season.

Small Salading of all kinds may be sown on warm borders exposed to the south; it would be best however to protect them with coverings of matting, long straw or cornstalks.

Celery. The seed of this healthful and delicious vegetable may now be sown on warm borders with southern exposures. The ground must be freely manured with fresh horse dung, a moiety of which should be dug in a spat deep, then rake, put on the other half of the manure, dig that in 4 inches deep, rake, sow your seed, rake them in and pat the earth with the back of your spade. By taking this pains you will have early celery plants to set out, and thus secure your family with a supply of one of the most palatable vegetables that ever added to the luxury of a plate of well made soup, or graced the dinner table.

Beets, Parsnips and Carrots. As soon in this month as the ground may be sufficiently free of frost to allow of being put in good order, you may sow the seed of each of these roots for early use. No more, however, should be sown than may be necessary to supply the table during summer, unless you may have the

advantage of a market to dispose of any surplus you may raise. To grow them sweet, well rotted manure is best.

Spinach, Lettuce and Radishes. The seed of these may be sown on warm borders on and after the 20th of this month.

Sowing Pot & Medicinal Herb Seeds—So soon as the earth is in a condition to be dug, the seeds of these families of plants may be sown—and while we are pointing out the time let us remark, that every garden should have in it, its beds of *Thyme, Sage, Parsley, Summer Savory, Sweet Margery, Baulm, Lavender, Bergamot, Celandine, Chamomile, Horehound, Fennel, Tansey, &c.*, together with *Garlic, Chives* and *Shallots*.

Early Potatoes.—If you desire to be a little ahead of your neighbor in growing early potatoes, prepare a bed as soon as the frost is out of the ground, by manuring it liberally with rich stable dung, rake, draw your drills 4 inches deep with the corner of a hoe, then plant whole potatoes about 11 inches apart, spread long stable manure over them, and after strewing a mixture of plaster and ashes over that cover with the earth. Do not apprehend that the potatoes will come up to be injured by the frost, as, consulting nature, they will await until by the genial heat of the earth, their vegetable powers will be developed not to be nipped by the frosts, but to bear fruit.

Gooseberries and Currants may now be pruned—so also may fresh plantations be made of the cuttings.

Raspberries.—Prune and tie up your raspberry bushes about the middle of this month; if the frost is out of the ground, you may plant out the runners.

Annual Flowers.—The seeds of most annual flowers may be safely planted as soon as the frost is out of the ground.

Herbaceous Flowering perennials of all kinds may be planted out as soon as the earth is dry enough to be dug and put in good order.

Fruit Trees.—Your garden fruit trees may now be pruned—if you have none there, plant some, but be sure to get the best kinds and those that have been grafted by a skilful hand—buy of none but a conscientious responsible nurseryman. Provide your homestead with good fruit—you will love it the more, your family will be grateful while your neighbors will appreciate your patriotism the more highly, and very soon follow your laudable example.

THE AMERICAN FARMER.

BALTIMORE: FEBRUARY, 1847.

To A SUBSCRIBER.—A top dressing with either *Guano* or *Bone-dust*, would be of great service, even "at this late season." The bone dust would be the better of undergoing fermentation before being applied—and our advice would be to use plaster with the Guano, in the proportion of 1 part of the former to 3 of the latter. The other questions shall be answered in our next.

To W. DOWNEY OF NEW-MARKET, MD.—Your enquiries came too late to enable us to do justice to the subject in the present No. They shall be attended to in our next.

☞ The extreme length of several articles contained in the present No. of the "*Farmer*," (which were promised in our last,) has prevented us from giving our usual variety. Much to our regret, we are compelled to divide the able paper of Dr. Gardner, on the rotation of crops.

We acknowledge the receipt of the 8th No. of Colman's "*European Agriculture*,"—but have not had time to examine it. Two more Nos. will complete the work. Those wishing to obtain it can be supplied through the publisher of this paper.

We have received the January No. of Skinner's *Farmer's Library*, a work which should be in the library of every farmer and planter. Subscriptions received at this office.

We have received from the publishers, Greely & M'Elrath, N. York, a Phrase Book of *English and German*, by Moritz Ertheiler, teacher of the German language in the city of New York—a work of much usefulness, we should suppose, to those learning either language. It is for sale at the bookstore of Wm. Taylor & Co. North st., and also of the publisher of the Farmer—price 25 cents. It can be sent by mail.

A supply of the new work by Allen, "*American Agriculture*," noticed in our last, has been received at this office; those who were disappointed in not obtaining a copy of the first lot can now be supplied.

The communications from Mr. *Physick*, on *Butter Making*; from Col. *Bowie*, on the *Potatoe Disease*; from Mr. Gowen, on the *Osage Orange*; and Mr. Wood's essay, will be read with much interest. We expect to receive a further communication from Mr. Physick, on the subject of the dairy, perhaps in time for our next No.

Our correspondent in Howard District, will find by the crowded state of our columns, that we have not been able to publish his essay in this month's No. We think we can promise it in our next.

The proceedings of the Talbot Co. Societies, will be read with interest; as will also the graphic sketch of the doings of our neighbors of Delaware.

ANIMAL FOOD.

[Experimental researches on the food of animals and the fattening of cattle; with remarks on the food of man; based upon experiments undertaken by order of the British government. By Robert Dundas Thompson, M. D. From the last London edition. Published by D. Appleton & Co. 200 Broadway, New York; and for sale at J. S. Waters' bookstore, Baltimore.]

The above work is before us, and from the ample scope for research and observation, as demonstrated by its title page, the intelligent agricultural reader will very readily perceive that it must contain matters of the first importance, to all engaged in the business of tilling the earth. Nothing can more intimately concern the husbandman, than that which relates to the *food* of animals, and the fattening of cattle; for in these two matters are concentrated much of the true economy of the farm. To understand the principles upon which that *economy* rests, should be an object of moment with all who desire to act *advisedly* in all things in which their interests are concerned.

We shall carefully read the work, and hereafter speak of it as we may think its merits or demerits deserve; but, in the mean time, the intelligent husbandman who chooses to judge for himself,—and all ought to do so—will buy the book, read its pages, investigate its facts and theories, scan its reasonings, and judge for himself—and in so doing act up to that line of independence, which is so becoming in the character of an American agriculturist.

THE NEWS AND THE MARKETS.

The advance in the value of Flour, occasioned by the steamer Hibernia's news, is full *one dollar* per barrel—with large transactions at all prices from the starting points, $4 87½@$5, up to $6—the closing rate. Wheats, if here, would bring an advance of 25 cents per bushel on previous prices. Corn has also risen about 15 cents per bushel.

THE ACTION OF GYPSUM ON MANURE.

Notwithstanding the virtue of Plaster, as a promoter of vegetation, has been known for the better part of a century—notwithstanding its wonderful effects in urging forward the growth of certain families of plants, and the wonderful increase in the products thereof, which it is obvious are referrible to its agency,—it is still a debatable question among the learned in vegetable physiology, what is the specific action which it exerts. The effects produced by it are visible to a line wherever it may be sown on part of a field of clover, or wherever it may be applied to such plants as are known to be influenced by its peculiar propensities. While all acknowledge its benefits, there are but few who agree in opinion, as to how those benefits are brought about. Nor, indeed, so far as effects are concerned, is it important that opinion should settle down on any particular *theory*, RESULTS being the things that the practical farmer looks to with the most concern; because it is to those *results* that he has to look to fill his corn cribs and hay ricks. But it may, in this state of uncertainty, not be unprofitable to examine a little into the probable cause to which vegetation is indebted for the benefits derived, as, if we can only arrive at an approximation of what that cause is, it may induce many to use it who might otherwise be deterred from doing so. With the view of exciting a spirit of inquiry, but not with the vain hope of settling the question, we shall array the opinions of a few of the eminent individuals who have written upon the subject, and make such remarks thereon as may appear to be called for by the occasion.

For a considerable time, the two prevalent opinions were:

1st. That plaster encouraged vegetation by its promoting the decomposition of vegetable matter in the soil, thus as it were accelerating the preparation of the food of plants. This opinion we never thought susceptible of demonstration, and for the following reason. Plaster is generally applied on the *surface*, and from the difficulty of its solubility, (it requiring from 300 to 400 parts of water to dissolve *one* of plaster,) the quantity thus conveyed into the earth, could not, if it were a solvent, produce sufficient *decomposition* to bring about those striking effects, which every farmer, who may have tried it, have witnessed, because of the minute portions which, in a soluble state, would have been carried into the earth.

2nd. That its properties were exclusively stimulative, acting as do stimulants taken into the human stomach.

This latter opinion had for a long time many supporters, and we confess that we were of that number. But after reviewing the grounds upon which that opinion was based, we abandoned it; and although we were unable to assign any tangible reasons for the action of plaster, we have not for years considered it either philosophic, or consonant with any practical views which we had formed of its operation, to refer its agency to its stimulative properties. The first fact which weakened our belief in the stimulating theory was contained in the following sentence from the pen of that able and observing farmer, Col. John Taylor, of Caroline, Virginia: He says:

"For some years I have used *gypsum* with the coarse manure of the farm yards, and I think it the most beneficial way of using it. The manure carried out each day is ploughed in, before which one bushel of gypsum to the acre, ground fine, is sown on it, after it is spread."

This fact, if improved of by agriculturists, would be worth much. It set us to reasoning upon the subject, and although we could not divine its specific action, it enabled us to arrive at the conclusion, that the affinity which plaster possessed for that portion of the barn-yard manure which was evanescent, must be *conservative*, and as such prevented its loss. If the action of plaster were solely *stimulative*, it is obvious to common sense that it could only increase a crop to the extent of the weight of so much of its own body as might be dissolved by the rains, which as it takes four hundred pounds of rain water to dissolve one of plaster, could not reach many pounds, in the course of a season; so that if its stimulating properties were ever so great, under the circumstances, if we are to be governed by rational views of the laws of nature, we cannot believe that so great an amount of increase could be produced as are annually witnessed by those who note its effects. We know from an actual experiment, which we made with accuracy, that one bushel of plaster, ground fine, and strewed over an acre of land in clover, increased the yield one ton, over that of another acre immediately adjoining, where the soil, manuring, ploughing and preparation were precisely the same. Now then, if the property of plaster was *stimulating* alone, if we were to grant—which we do not—that the whole of it had been dissolved and taken up by the plants of the clover, it could only have added its own weight by way of increase to the crop of clover, which we presume would have been one hundred and twenty pounds; but instead of this, we find the increase actually to have been twenty hundred pounds. Whence comes this disproportionate increase? is the question to be considered. *Yeart* long since referred the action of gypsum exclusively to the effect of the sulphuric acid, which forms one of its chief elemental constituents, and cited instances of analagous substances bringing about similar results in the fertilization of the soil. He, we believe, was right in his ascription; but then, though he was able to tell which of the elements effected the *good*, he failed in assigning the modus operandi by which that good was brought about.

Laysterie, a third of a century ago, maintained that "*Gypsum takes from the atmosphere the elements of vegetable life*"—and if he did not, like Liebig, of more recent date, give the precise mode of action, he is entitled to the honor of making the discovery as to the source whence it derived its efficacy.

Mr. *Madison*, too, though not ranking as a chemist, as far back as 1819, in his able address before the agricultural Society of Albemare Co. Virginia, appeared to entertain very just views with regard to the action of this mineral manure. In speaking of its efficacy, he says:

"Plaster or Gypsum, though not a manure within the farm itself, has been too long neglected as a fertilizing resource. It is now beginning to take a high and just rank as such. The proofs of its efficacy are as incontestible as the causes of it are obscure. The experiments of a very distinguished chemist, Sir Humphrey Davy, led him to the opinion, that its substance enters into the substance of the plant. Without doubting the fact, it does not sufficiently account for the addition made to the size and weight of the plant, which greatly exceed the quantity of the plaster It must, therefore, have some further mode of operating. Whether it be by neutralizing some noxious ingredient in the earth, one of the modes by which lime is supposed to operate, or by *attracting and conveying to the plant, food from the earth, the air or water.*"

The words which we have italicized above, contain, in our view, the whole mystery of the operation of plaster, and although Mr. Madison did not *assert* such to be the fact, by *suggestion* he hit upon the true *cause* of the fertilizing properties of plaster, which cause has been satisfactorily, but much more recently explained by Liebig. But if to this distinguished chemist be due the honor of furnishing the mode and the method by which plaster attracts from the air the *nutriment* on which plants do feed, are nurtured in their growth, and enabled to bear their fruit, the *thought* was conceived by our own illustrious statesman twenty eight years ago—and though he did not dress it off in the beauties of chemical affinities, his philosophic mind threw out the spark which has been subsequently kindled into a fire, whose light will be reflected to benefit mankind wherever the pursuits of the field are cherished as those of virtue and peace.

Having spoken of the explanation of Liebig, we will quote his words. He says:

"The evident influence of gypsum upon the growth of grasses—the striking fertility and luxuriance of a meadow upon which it is strewed,—depends only upon its fixing in the soil the ammonia of the atmosphere, which would otherwise be volatalized, with the water which evaporates. The carbonate of ammonia contained in rain water is decomposed by gypsum, in precisely the same manner as in the manufacture of sal-ammoniac. Soluble sulphate of ammonia and carbonate of lime are formed; and this salt of ammonia possessing no volatility, is consequently retained in the soil. All the gypsum gradually disappears, but its action upon the carbonate of ammonia continues as long as a trace of it exists." * *

"The action of gypsum really consists in their giving a fixed condition to the nitrogen,—or ammonia which is brought into the soil, and which is indispensable for the nutrition of plants."

"In order to form a conception of the effect of gypsum, it may be sufficient to remark that 100 lbs. of burned gypsum fixes as much ammonia in the soil as 6250 lbs. of horse's urine would yield to it, even on the supposition that all the nitrogen of the urea and hippuric acid were absorbed by the plants without the smallest loss, in the form carbonate of ammonia. If we admit with Boussingault, that the nitrogen in grass amounts to 1-100 of its weight, then *every pound* of nitrogen which we add, increases the produce of the meadow 100 lbs., and this increased produce of 100 lbs. is effected by the aid of a little more than 4 pounds of gypsum."

"Water is absolutely necessary to effect the decomposition of the gypsum, on account of its difficult solubility, (1 part of gypsum requires 400 parts of water for solution,) and also to assist in the absorption of the sulphate of ammonia by the plants: hence it happens that the influence of gypsum is not observable on dry fields and meadows."

"The decomposition of gypsum by carbonate of ammonia does not take place instantaneously; on the contrary, it proceeds very gradually, and this explains why the action of the gypsum lasts for several years."

Having given the extract from the essay of Col. John Taylor, of Caroline, to show the advantages to result from strewing plaster over manure as it may be spread on the field to be ploughed in, it may be well to state the manner in which it acts.

All stable and barn yard manures, while undergoing the process of decomposition, throw off large portions of gaseous matter. This gaseous matter comprises what may be termed the nutritive properties of the mass—a substance identical with the carbonate of ammonia, and as such is necessarily volatile, and which if not arrested by some counteracting agent will be lost to agriculture. By strewing plaster over such manures, the sulphuric acid of the plaster assimilates with the carbonate of ammonia, and forms a sulphate of ammonia, which is not volatile, and therefore remains in the soil as a store-house, whence, after each succeeding rain, the growing plants may draw their supplies of nutriment. It ceases to be a mystery then, why Col. Taylor found plaster so serviceable, used in this way, as he was thus enabled to prevent the escape of the most valuable gases eliminated by the decaying vegetable and animal bodies comprised in his manure piles—and to husband them for the uses of his crops. And we will add, that we believe that if manure were to be treated to a dose of plaster, as was that by Col Taylor, it would last three times as long as the same quantity which should not be thus treated.

As the period has now arrived when all prudent farmers will be drawing out their manure, we have felt it to be our duty to prepare this article, in order that they may avail themselves of the facts and suggestions which it contains.

PROPER MANURE FOR SOILS.

"What manure do you think would be best for my lands?"

"That's a question which I cannot answer."

"Why not?"

"Because, in the first place I do not know the character of your land, whether it be clay, clay mould, sandy-mould or gravel, and secondly, because I do not know whether it has been badly or well tilled—and whether it has been cultivated upon the starving or fertillizing principle."

"It is of various soils—part a very stiff clay, which has been hardly worked and poorly manured. It once afforded good crops of wheat, but has of late years failed to yield more than 6 or 8 bushels to the acre—the rest is divided between clay-mould and sandy-mould—those portions once yielded fine crops of corn, rye and oats, but have so fallen off as not to pay me for the trouble of cultivation. Now, as you have got the information you desire, tell we what I am to do to restore my land to fertility."

"Tell me—have you kept any portion of your land under a regular course of grass?"

"No, I have about 12 acres of low ground in timothy, which gives me hay for my riding horses—the work horses and other stock are fed upon blades and tops."

"Do you not sow clover seed on your wheat?"

"No."

"Then it is time to turn over a new leaf. As early as you can this month sow 12 pounds of clover seed over every acre of your wheat field. Immediately after harvest sow 10 or 20 bushels of lime over every acre of your young clover, and upon the top of that sow a bushel of plaster per acre—do not suffer your stock to get a hoof upon it, and the next season you may cut a fair crop of clover for hay, as also the succeeding season, provided you sow the following February a bushel of plaster on each acre. The next autumn plough in the second crop of clover, and give to your field an additional quantity of lime, say 20 bushels to the acre—after that you may calculate on growing a fair crop of wheat. As to your clay-mould, and sandy-mould fields, if you desire to restore them, they too, must have the advantage of clover, lime, plaster, and a rotation of grain crops. You must lend all your energies to the accumulation of manures, mineral, animal and vegetable, and be sure to deal out liberal doses to all your fields when in corn, as you may rest assured, that without you feed your land, it will soon cease to feed you. The horse that is badly fed cannot work well; neither will the soil continue to yield remunerating crops, unless you keep up its fertility by liberal applications of manure. Where your barn-yard and stables fail to afford supplies, you must go to the woods, to the ditches, to the marshes, and road sides and fence corners, cart and wagon the resources there to be found into your cattle yards, spread them thereon, and strew plaster on the surface, and the excrement and liquid voidings of your stock will do all that is needful to convert the substances named into good manure. A farm thus provided for, will, in a few years, be restored to fertility. But I wish you to bear in mind, that permanent fertility can alone be effected and preserved, by means of continued vigilance, lime, ashes, clover, and an alternation of crops.

☞The news by the last steamer is favorable for the *Cotton* as well as *Grain* growers.

EXHIBITION OF THE TALBOT CO. AGRICULTURAL SOCIETIES.

Report of the Committee on Horses.

Best stallion over 3 years old—Henry Smith—Dey of Algiers.
Second—Freeburn Harrison—Young Sam.
Best brood-mare—Jas. Tilghman, of Jno.—Belle.
Second best—Col. N. Goldsborough—Fanny Elsler.
Best saddle mare or gelding—Wm. A. Sullivane—grey mare.
Second best—James L. Martin—sorrel mare.
Best single-harness mare or gelding—F. J. Henry—Harry Clay.
Second—N. E. Nicols—brown mare.
Best pair matched carriage mares or geldings—Jas. Ll. Martin—grey horses.
Second—Gen. T. Tilghman—bay horses.
Best Filly—Joseph K. Cook—by Sambo.

Report of the Committee on Asses and Mules.

Best Jack—Jno. N. Hambleton—Peter Simple.
Best mules over 3 years old—Saml. Hambleton, Sr.—by Peter Simple.
Second—Jno. N. Hambleton—by do.
Third—Richard Trippe.
Best under 3 years old—J. N. Hambleton.

Cattle.

Best bull over 2 years old, Saml. Hambleton—short horn.
Second, Thomas A. Emory—do
Best do. under 2 years old, Capt. F. Buchanan—Grade short horn.
Second, Thos. A. Emory—short horn.
Best Cow, Thomas A. Emory—do.
Second, Wm. H. Groome.
Third, Jas. Ll. Martin—Devon & Bordley.
Best heifer, Saml. H. Benny—grade short horn.
Second, Jno. W. Martin—short horn and Devon.
Third, Jno. W. Martin—do.
Best yoke of oxen—Saml. Hambleton, Sr.—short horn.
Second, Wm. Hayward—do.
Best beef, Wm. Goldsborough—spayed heifer.
Second, Wm. Goldsborough—do.

Sheep.

The committee to whose inspection the Sheep were submitted, and to whom was assigned the duty of awarding the several premiums offered for this species of stock, report:

That there were thirteen entries for these premiums. The sheep exhibited were generally superior animals, in fine condition, and did much credit to those who reared them. The sheep, which is so valuable and useful a domestic animal, has in Talbot, and several of the other counties of the Eastern Shore, received much attention from the breeders, and the eminent success which has crowned their efforts has most amply rewarded the breeders for their attention and labor in rearing an animal which for its valuable qualities can scarcely be too highly prized. At this time the sheep we raise on the Eastern Shore will, for the beautiful symmetry of their forms, for the productiveness of wool of fine staple, and for the rich and delicate flavor of their flesh when served on the table, successfully compete, as we think, with the sheep of any other section of the country.

For the premiums in the present instance, there was very considerable competition, and in awarding them, the Committee were not without difficulty, as they were not as fully informed of the breeds and crosses of the respective lots of sheep that were sub-

mitted to their inspection as they could have desired. Judging, however, from the best information they possessed, and from actual and critical inspection the committee with much unanimity awarded the respective premiums as follows:

Best ram, Gov. Saml. Stevens—Bakewell.
Second, Col. N. Goldsborough—do.
Third, Gen. T. Tilghman—do.
Fourth, Jas. N. Goldsborough—Southdown & Bakewell.
Best ewes, Gov. Saml. Stevens—Bakewell.
Second, M. Tilghman Goldsborough—Southdown.
Best Wethers, Gov. Saml. Stevens—Bakewell.
Second, Gov. Saml. Stevens—do.
Third, Col. N. Goldsborough—do.
Fourth, Gen. Tilghman—do.
Fifth, Jas. Tilghman of Jno.—Leicester.

Having discharged the duties assigned them by awarding the several premiums, the committee might here close their report. But before doing so, they would respectfully offer a few remarks, which are suggested by the contemplation of the nature and character of the animal they have had under their immediate inspection.

The sheep, one of the most valuable of our domestic animals, is well known to be the most timid and defenceless, and of all, the least capable of protecting itself from injury and aggression, and on that account especially claims from man his care and protection. From no source do sheep suffer half so great an injury as from the stealthy attacks of those vile and miserable mongrel curs, which too often infest our agricultural communities, and against whose depredations it is so difficult a matter to guard. The annual destruction of sheep by worthless dogs is really immense. Fine and valuable flocks are not unfrequently irreparably injured if not totally destroyed. The evil we speak of need only be mentioned to bring it forcibly to the minds of every farmer and sheep breeder. The frequent losses he has sustained by the attacks of dogs on his sheep, make him feel that it is an evil of no small magnitude, and one which cannot be too strongly deprecated.

For this evil is there no remedy? The subject we think presents a matter for inquiry which most appropriately belongs to those who have in charge and exercise an influence over the agricultural interests of a community. This evil we do believe might, by proper effort on the part of farmers and sheep breeders, be in a very great measure remedied. And to effect this object we would suggest that Legislative aid might be advantageously invoked in the passage of wholesesome laws, which would protect the sheep of the breeder and farmer from injury and destruction, and at the same time would exert a most salutary influence in destroying the sheep's worst enemies, the mongrel curs, those noxious pests and nuisances which cannot be too soon suppressed and abated.

Having with these hasty remarks, suggested to the Agricultural Associations of Talbot a subject of no minor importance and one worthy of their consideration, and having invited their earnest attention to it, by leaving it in their especial charge, the ablest hands to whom it could have been confided, the committee now close their report.

All of which is respectfully submitted, by

R. C. Hollyday, Chairman.

Swine.

Best boar, M. T. Goldsborough—Berkshire and China.
Second, Rev. Thomas Bayne.
Third, Thos. Wright—½ China, ¼ Dutch, and ¼ Berkshire.
Best sow, Wm. P. Leaverton.
Second, Rev. Thos. Bayne.

Agricultural Implements.

The subscribers, appointed judges to examine and report upon the Agricultural Implements exhibited for show and premium, at the Easton Cattle Show & Fair, greatly regretting the absence of their chairman, and other experienced members of their committee, and further regretting the want of competition amongst the exhibitors—the most of the implements on the ground being from the establishment of Ezra Whitman, Jr. of Baltimore—having performed the duties assigned to them in the best and most impartial manner they could, under the circumstances, have to report, that the implements exhibited appear to be well gotten up, and, as far as the committee could judge, not having seen any of them tested, well calculated to effect the objects for which they are respectfully designed; and they award premiums as follows:

To E. Whitman, Jr., for the best two horse flushing plough, (being Prouty & Mears' centre-draught.)
Best seed plough, do. do.
Best subsoil plough, do. do.
Best drag harrow.
Best wheat fan, (Grant's patent.)
Best fodder cutter and grinder, (Royer's.)
Best corn sheller, (double.)
Best straw-cutter, (Henry's)
To M. Tilghman Goldsborough for the best ox yoke and bows.
To same for best ox cart, (made by Edw. Stewart.)
To same for his farm gate, (valuable for its simplicity of construction, easiness of repair, strength and lightness,) a discretionary premium.
To Mrs. M. T. Goldsborough for improved box churn.
To Tench Tilghman for his improvement on Hussey's wheat reaper, a discretionary premium.

Mr. Whitman also exhibited a variety of other implements, not particularly herein noticed, for which the committee think the approbation and thanks of the Society ought to be tendered to him, as the greater the quantity and variety of articles exhibited, the more the agricultural advantage and interest is thereby promoted and excited throughout the country.

Edw. Tilghman,
Thos. C. Brown,
Josiah Chaplain.

Since the above report was drawn up, we have seen No. 5 1-2, Prouty & Mears' plough, the subsoil plough, and the Grant's fan in operation, and are thereby confirmed in our views as above stated.

Domestic Manufactures.

The Committee on domestic manufactures beg leave to report, that after a suitable examination of the various articles presented for their consideration, they have awarded the following premiums, viz:

Best hearth rug, Mrs. Wm. M. Hardcastle.
Second best, Miss May Stevens.
Best bed quilt, Mrs. William M. Hardcastle.
Second best, the same.
Best counterpane, Mrs. William B. Willis.
Second best, Mrs. Eliza E. Bayne.
Best pair of fine woolen stockings, Joseph K. Cook.
Best pair of thread stockings, Joseph K. Cook.
Best pair of woolen gloves, the same.
Best pair of thread gloves, the same.

For the latter articles of stockings and gloves the

committee regret to say there was no competition, but those presented were of such superior quality, that the committee could not hesitate to award them premiums.

Best pair of field laborer's shoes, Wm. H. Sheppard.

For this article also there was no competition, but the shoes offered appeared to be of such superior quality that the committee felt bound to award a premium

Best sample of home made soap, Mrs. Julia A. Bowdle.

There being no coarse woollen stockings or fulled kersey offered for negro clothing, no premiums were awarded for those items. The committee beg leave to remark that although neither the quantity nor variety of domestic manufactures was so great as upon some former occasions, yet the most of those presented were highly creditable both for taste and durability.

The committee will further remark that there were some articles presented for exhibition for which no premiums had been offered by the societies, but which the committee think so remarkable for taste and ingenuity that they feel called upon to recommend them as *well deserving of premiums.* The first of these is a beautiful vase of flowers, birds, &c., made and presented by Miss Mary E. Banning; also a pair of tanned wool door mats, made and presented by Miss Susan A. Banning, both of Talbot county. In the manufacture of this last article, both the tanning and coloring were done by Miss Banning herself. Also a worked cape and collar presented by Miss Sarah E. Goldsborough, of Talbot county. Also a pair of cotton stockings, knit by Miss Mary S. Trippe, now in the seventh year of her age.

All which is respectfully submitted, by

Wm. H. Groome, Chairman,
Saml. Mackey,
Edw. M. Dawson,
Wm. Loveday,
Robert M. Willson,
Howes Goldsborough, Jr.
Richard Feddeman.
} Committee.

N. B. In accordance with the recommendation of the committee, discretionary premiums have been awarded to Miss Mary E. Banning, Miss Susan A. Banning, Miss Sarah E. Goldsborough and Miss Mary S. Trippe.

Butter and Bread.

The committee for the examination of Butter and Bread offered for premium, beg leave to report:

That they entered upon the delicate duty assigned to them with some misgivings as to an accurate discrimination, many very excellent specimens of these articles, so highly creditable to domestic economy and skill, having been submitted to their inspection.

In the article of bread, they regretted to find no competition for a best sample of corn bread, at this time an object of more than ordinary interest, susceptible of various modifications, and no where better prepared than upon our shore. For the absence of a *bachelor's pone* they were in some degree compensated by a sample of that boast of good housewifery, hominy bread. A sample of bread under the designation of "milk-rising" attracted the attention of the committee, as possessing all the marks of excellent bread, but they were constrained to award the premiums as follows:

For best loaf of light bread they were induced to select, as superior in every point, that numbered '12,' and now ascertain to have been presented by Mr. Joseph K. Cook, of Queen Ann's.

To No. 10, "sealed," sent, as the committee understood, by Mrs. Henry Hollyday, was adjudged the second premium. A large and substantial loaf of corn bread, being baked with much skill, was deemed worthy of a premium in the opinion of a majority of the committee, though the only sample offered; which premium was awarded to Mrs. William Hardcastle.

For the best sample of fresh butter they awarded the first premium to parcel marked No. 2; which, they learn, was exhibited by Joseph K. Cook.

Mrs. William H. Groome received the second premium for her parcel, marked No. 5, and to Miss Lydia Hambleton was awarded the third premium.

Of potted butter only two samples were presented, and the committee adjudged the first premium to Miss May Stevens, and the second to Mrs. Henry Hollyday.

The evidence of skill in this department was highly gratifying to the committee, and while they present it, as a subject matter for congratulation, they would fain express the hope, that a feeling of salutary rivalry may have the happy effect to bring to some future exhibition 'cheese of kine," also; that our young and enterprising Davids may be found running to the camp with their "ten cheeses" along with their ten loaves by way of hearty greeting to any absent brethren.

All of which is respectfully submitted.

R. F. Hemsley,
William. B. Smyth,
T. Thomas,
Saml. S. Earle,
A. M. Goldsborough,
P. Robinson,
John Bozman Kerr,
} Committee.

Ploughing Match.

The committee upon ploughing beg leave to report that the general execution of the work of the respective ploughs was excellent and highly creditable, and that after the most careful inspection and examination, they award the first premium for ploughing to plough No. 1, owned by John W. Martin, Esq. The premium for the next best ploughing they awarded to plough No. 5, owned by Dr. S. M. Jenkins. The first premium to the best ploughman, they award to Mr. George Tarbutton, the ploughman of No. 1. The premium for the 2d best ploughman, they award to Negro Juba, the ploughman of plough No. 5.

Wm. B. Willis, Chairman.
Thomas S. Hayward,
James Bartlett,
David Kerr, Jr.,
R. L. Seth,
Wm. H. Fairbank,
} Committee.

Field Crops.

To the Agricultural Societies of Talbot County.

The committee on Field Crops respectfully report: The specimens offered for our consideration were few, and not very superior. Owing to the great drought during the summer, and other very unfavorable causes, none of our farmers were able to come up to their own expectations, and each, naturally supposing that others would far excel, was deterred from entering the contest, a circumstance much to be regretted. It is ardently hoped that, to future exhibitions, all those who have good crops, will send specimens although they do not entertain the hope of obtaining the premiums. We will by this means show strangers not only what an Eastern Shore farmer can do, but what Eastern Shore farmers usually

do, and at the same time correct the erroneous impression too extensively spread abroad, that the Eastern Shore lands are not of the first quality for agricultural purposes.

There were two good samples of Indian corn presented, but the necessary requisites to entitle them to premiums had not been complied with. Those specimens of other field crops, where the requisitions had been complied with, though creditable, for this season, to their producers, yet they were not sufficiently so, in the opinion of a majority of the committee, when they take into consideration the high state of agriculture of Talbot and the adjacent counties, to entitle them to premiums.

HENRY HOLLYDAY, Ch'n,
THOMAS S. CARTER,
JAMES T. EARLE,
EDWARD HARRISON,
WILLIAM HARDCASTLE,
DANIEL LEONARD,
JAMES SETH,
EDWIN J. STEVENS,
} Committee.

Vegetables.

The committee on vegetables beg leave to report, that they award the premium for Celery, to Mrs. Anna M. Chamberlaine.
Cabbage, to the same.
Carrots, to No. 1, Mrs. Kerr.
Parsnips, to N. E. Nicols.
Beets, to Mrs. M. T. Goldsborough.
Onions, to Samuel Emerson.
Squashes, to the same.
Best peck of Irish potatoes, S. H. Benny.
Sweet potatoes, to Wm. C. Skinner.

The great drought of the past season operated greatly to the injury of the vegetables of the county, and yet there were some fine specimens exhibited, especially of cabbages and sweet potatoes.

Respectfully,
JOSEPH R. PRICE,
SAML. T. EARLE,
PETER STEVENS,
THOMAS S. CARTER,
JAMES TILGHMAN,
} Committee.

Poultry.

Best pair of Turkeys, (male and female,) Mr. Jno. W. Martin.
Best pair of muscovy ducks, Mrs. M. T. Goldsborough.
Best pair puddle ducks, Thos. Wright, 3d.
Best pair fowls, Wm. C. Skinner.

REPORT OF THE COMMITTEE ON FARMS.

The committee on farms, aware of the delicacy of the task assigned them—having no instructions from the board—deemed it necessary in the outset to agree upon some general principle which should control their action. Destitute of that refined experience which of itself would lead to such a principle, they looked to the annals of the Maryland Agricultural Society and found the following as recommended: "The premium should be given to one who has made the safest and most profitable application of labor and capital, rather than to one who has made splendid improvements and great crops by yet greater expenditures."

They agreed that the general appearance of a farm should be looked upon as but a superficial test of the farmer's merits. That the difficulties overcome in bringing it to the state in which they might find it should be considered a better test, and the proportional increase in production during the period of his management best of all.

Believing the principle to be correct—looking upon these simple views as arising out of it in the course of reason and of common sense, and desiring as far as practicable to carry them out and at the same time to elicit solid information upon the subject of agriculture—they determined in all cases to request information as to the following particulars—1st. The number of acres of cleared land. 2d. The time of taking possession. 3d. The general condition as to fencing and ditching at that time. 4th. The increase in production and the number of hands and teams employed.

The farm occupied by Mr. John Baynard, as tenant of Samuel Hambleton, Sr., was the first to which their attention was called. The number of acres of cleared land as given by Mr. Hambleton, is one hundred and eighty. The time of his taking possession, Jan. 1st, 1834. The condition as to fencing and ditching very bad. The number of hands employed, four, two men and two boys. The number of horses and mules, four. Oxen, none. It will be seen by Mr. Hambleton's statement, the first year's crop, both wheat and corn, were raised under the three field system. Beginning at the period, when his cultivation under the four field system commenced, it will be found that the wheat crop increased about thirty per cent. during the second series of four years, and that at the end of twelve years the increase as compared with the first four years, was about eight per cent. The corn crop in like manner was increased thirty and afterwards thirty-seven per cent. The committee found the fencing and drainage in every respect worthy an industrious farmer—large accumulations of manure ready for his corn field, his corn husked and prepared for market.

They next visited the farm rented by Mr. Philemon Willis, a part of Gen. Tilghman's Plimhimmon farm. After a full examination of his farm, and of the labors undergone by him; the amount of fencing made entirely new; the manuring done, taking into consideration at the same time the fact that he has employed the same amount of labor with the addition of two pair of oxen, they have found it very difficult to decide which of the two has done most with his means, and the difficulty has been much enhanced by the fact that a member of the committee has from motives of delicacy, declined expressing an opinion. Upon comparing the crops raised by these gentlemen, it has been found that Mr. Willis has not increased his corn crop as much in proportion to the time he has occupied the farm by about two per cent., but that the crop of wheat, leaving entirely out of view that which has been raised on fallows, has increased in one course of cultivation very nearly one hundred per cent., and although in the last series of three years the increase has been reduced, the statement furnished shows that there is still an increase of more than sixty per cent.

The farm lately owned by Capt. Thomas Coward, now occupied by Mr. Samuel Emerson, next claimed their attention. As far as an opinion could be formed from a single inspection, and from the accounts given of Mr. Emerson by his neighbors, the committee think him equal as a farmer to either of the others named. Paying a heavy rent, he nevertheless aims to improve the land as well as to make large crops. They are sorry that he has not lived long enough on this farm to have gone through more than one round of cultivation.

In deciding between these gentlemen, (they feel bound to decide as a fair case is presented for decision,) they have only to regret that there is not a premium for each, and although they have kept as much

as possible before them the views with which they started out, they think it not impossible that their decision may be wrong. The first premium for a rented farm they award to Mr. Philemon Willis, and the second to Mr. John Baynard. The time within which they have been constrained to act has been so limited, that in the two cases where gentlemen cultivating their own farms have offered for premiums, it has been impossible to arrive at such information as would justify a decision. They deem the criterion which they have used, as a last resort in the case just disposed of, as peculiarly applicable to owners of land, and think that for the sake of good example, it should be stringently applied. They have seen much in the management of both, which is worthy of imitation, and believe that either might compare with the best farmers in the country; yet having no ground upon which they could make any other than an arbitrary decision, they deem it no usurpation of power to recommend that the premiums for farms not rented be withheld. If, however, there be any rule of the society which requires that a decision must be made, the committee claim it as due to these gentlemen and to themselves, that it shall be made hereafter. They regret that time does not permit them to dwell upon the subjects of deep interest to all; that they cannot commend as they would, the enlightened liberality of the landholders, to whose tenants the premiums have been awarded—and that they cannot praise as they should, the honest industry which has already reaped a reward of which the premiums given are but the smallest part. The committee have witnessed many things that are gratifying, and have striking evidences that the Art of Agriculture is advancing towards perfection, and that gleams of the Science are shedding light on the way. They hail what they have seen as the *dawning* of an Era, when hand in hand the Art and the Science will bring as they promise, abundance to all.

THOS. R. HOLLYDAY,
JOHN McD. GOLDSBOROUGH, } *Committee.*
WM. B. WILLIS,

NEW CASTLE (DEL.) AGRICULTURAL SOCIETY'S FALL EXHIBITION

[We make the following extracts from the Report:]

"A procession in honor of the Society's guests, the inventors of agricultural implements, was formed in Wilmington, John D. Miles, Esq., Chief Marshall, who acted in the place of Jesse Sharpe, Esq., whose health did not permit his taking an active part on that day—though present and assisting as far as able—preceded by a Band of Music in a large open carriage—and to which succeeded the Society's guests, Moses Pennock, the inventor of the Horse Rake, and Obed Hussey, the inventor of Hussey's Reaping Machine, accompanied by Major Philip Reybold, seated in an open barouche; next the orator of the day; other invited guests; 300 mounted farmers; and to these succeeded a long line, extending more than a mile, of carriages and vehicles of different descriptions; while the road was almost crowded by those hastening forward on foot; arrived at the exhibition ground, an appropriate and affecting prayer was pronounced by the Rev. Mr. Foot, to which followed the Agricultural Hymns, and the very eloquent Address by Dr. Kennaday. After this, the Rev. Mr. Foot, by request, addressed the candidates for the premium on Cottage Gardening."

"We would here go into an argument to *prove* what the Agricultural Society of New Castle County in its influence and effects, is capable of doing for the cause of Agriculture, were such an argument necessary, and the occasion a fit one. There are some 20,000 persons in our County connected with Agriculture—more than $20,000,000 capital embarked in it. The merchants have their Chambers of Commerce; the mechanics their Institutes; the medical profession their Societies; the Bar its Associations, rules, and fee bills. But in the theory of some the Farmer should be a *recluse*—can derive no advantage from association—from familiar intercourse; and from a comparison of views, opinions and results with others; that from the 365 days not *one* can be spared for this purpose; at least one devoted to *a faithful discharge of his duties* as a member of a Society; in contributions, serving on Committees, or otherwise assisting in a Society calculated and intended to promote Agriculture.

If it were looked at merely with a view to dollars and cents, it might be proved to be of great pecuniary value in its results, to every member of the Society. One member of the Committee thinks he has been benefitted $100 a year for the last two years. He first saw, as he says, and purchased a superior Fan one year ago on the Exhibition Ground, after a trial there, assisted by a practical Brandywine miller. So clean was the crop of wheat that he subsequently got out with it, that he not only got an advance on it, but thinks he gained for his future wheat crops something in the way of reputation. Such implements, every variety of farm implements are, or should be exhibited at these Exhibitions. Hussey's Reaper, one of the greatest, the very greatest improvements ever made in farming implements after the Horse Rake, was constructed twelve years ago, yet it is only now beginning to be *known*. Had there been spirited and well conducted Agricultural Societies in every County in the Union, it would have been generally introduced ten years since, saving or earning the agricultural community probably ten million of dollars to this time. The same member thinks he is $75 the better this season in the matter of ploughing so many acres of clover sod. He thinks a bushel an acre between the sort of premium ploughing that has gone on in the emulation among the hands, and a less neat and careful husbandry in the absence of such stimulus, would be a fair estimate, particularly considering the dryness of the season, and the fact that such ground is ploughed but once. He also thinks he has been the gainer in the increased value of every description of his stock, his cattle, horses, hogs, sheep, &c., merely from the additonal *care* they have received, without one dollar of *expense*.

So much for the pecuniary advantage of these Associations. But are we merely to look at the subject in this light? Are there no "blissful visions of the future" but those in which the immortal dollar gleams? Is this glorious pursuit, engaging and exercising the highest qualities of the mind, science and philosophy, and we might add the best feelings of the heart, for we "look through nature up to nature's God," to be viewed merely as a mercenary calling? to be viewed solely as it will enable us to add acre to acre and field to field? Then does the honest day laborer enjoy in his toil, an infinitely higher gratification. He toils for the helpless, he strikes for the weak and unprotected, except as his arm can protect them. He has a pure moral pleasure, arising from a sense of having *discharged a duty*, that consoles and sustains him,— ——"The memory of the family hearth
That may well give strength, if aught give strength
on earth."

But this was the pursuit of Washington, not for gain alone, but as a means of doing good. It has been said that "the field and the Senate he sought from duty, but his farm at Mount Vernon from choice and pleasure." This great and good man, from the head of Armies and the Councils of Cabinets, found time not only to direct the operation, on his extensive farms in a general way, but to carry on a long and laborious correspondence with Sir. John St. Clair and others, the advantages of which his countrymen are now reaping. President Madison was an active contributing member to an Agricultural Society, and on one occasion, after leaving the Executive Chair, delivered the annual address. And shall we do *nothing*—attempt nothing? We trust, on the contrary, our Society will do much good, and the feeling of our Agricultural community is favorable to its support.—Their liberal contributions towards the collation—their appearance on the ground in such members with their families, sons and daughters, prove this. But we want *more zeal in action.*"

We select the following from several agricultural odes, written for the occasion, by Rev. D. Kennady:

SPEED THE PLOUGH.

"TUNE—*Auld Lang Syne.*"

The soldier, with his martial throng,
And banner waving bright,
May swell the loud, triumphal song,
To tell the rage of fight;
But we are come in purer boast,
To crown a victor's brow;
We come—a "*rough and ready*" host,
We come to speed the plough.

Chorus—We come to speed the noble plough,
We come to speed the plough—
We come, a "rough and ready" host,
We come to speed the plough.

The sailor, as his bark may glide,
With pendant streaming gay,
Sings as he mounts the heaving tide,
And ploughs his trackless way;
And we, upon our own green coast,
Will sing rejoicing now,
We come—a "*rough and ready*" host,
We come to speed the plough.

Chorus—We come to speed the noble plough, &c.

The statesman's wreath of lofty fame,
The poets garland too,
The flowers that crown the soldier's name,
Within our bowers grew:
Then who shall make a nobler boast,
Who bear a nobler brow,
We come—a "*rough and ready*" host,
We come to speed the plough.

Chorus—We come to speed the noble plough, &c.

The "staff of life" 'tis ours to raise,
On which the world may rest,
The "daily bread" for which man prays—
By which our labour's blest.
And though we "bear the burden" most,
Till sweat is on the brow,
We come—a "*rough and ready*" host,
We come to speed the plough.

Chorus—We come to speed the noble plough, &c.

From early morn 'till twilight shades,
Through honest toil we press,
In ways where pleasantness is spread,
"And all our paths are peace;"
No hour to us is ever lost,
No time moves dull or slow,
We come—a "*rough and ready*" host,
We come to speed the plough.

Chorus—We come to speed the noble plough, &c.

Our feet upon our own free soil,
Our hearts bound to our home,
With hands made strong in honest toil,
Should danger ever come,
Our country e'er our glorious boast,
We'll speed to meet the foe,
And rush—a "*rough and ready*" host,
To speed Columbia's plough.

Chorus—To speed Columbia's noble plough, &c.

The following correspondence between the committee on invitatation, and our townsman, Mr. Hussey, we annex:

NEW CASTLE, AUG. 26th, 1846.

DEAR SIR,—The undersigned have been appointed, by the Agricultural Society of New Castle county, a Committee to invite you to be present, as the Society's guest, on the occasion of the anniversary meeting, on Wednesday, the 16th of September.

As the inventor of "Hussey's Reaping Machine," you have given great additional advantages and facilities to the farmer in the cutting of his grain crop; indeed, so complete and perfect is your machine, and so great the labour it saves, so heavy the burden it takes from toil, that you cannot but be regarded as having conferred a *national benefit*, and as being the especial benefactor of the farmer.

It is to mechanical genius, the powers of invention, the fruits of which we thus acknowledge, that the farmers of New Castle County wish to do honor and to pay their most cordial respect.

They do purpose a procession, an address, agricultural odes, &c., in honor of this occasion, in honor of Agriculture and of their distinguished guests, yourself, Mr. Pennock, the inventor of the revolving Horse Rake, and perhaps one or two other inventors of improved farming implements.

The favor of an early answer is expected, and we trust nothing will be allowed to prevent your meeting the farmers of New Castle County as proposed.

With sentiments of the highest regard, we are, sir, most respectfully, Yours, &c.,

(Signed,) CHAUNCEY P. HOLCOMB,
JAMES W. THOMSON, M. D.,
JOHN C. CLARK,
JOHN JONES,

MR. OBED HUSSEY—*Baltimore.* Committee.

Mr. Hussey's answer:

BALTIMORE, SEPT. 12th, 1846.

GENTELMEN—Your letter inviting me to be present on the occasion of the Anniversary Meeting of the New Castle County Agricultural Society, Del., to be held near Wilmington, on the 16th., was not received by me until yesterday.

It gives me great pleasure to accept the Society's invitation, and I shall use every endeavour to be present on the day appointed.

I will take this occasion to thank you for the notice you have taken of my Reaping Machine, and for your very kind expressions with regard to myself. It is very gratifying to find my humble efforts in the invention and improvement of the Reaping Machine approved by the farmers of the country, and especially by those of the State of Delaware. It will be my highest ambition to deserve their approbation in my future efforts to relieve the toils of the tillers of the ground.

With sincere regard for the prosperity of your Society, and the highest respect for yourselves, individually, I am very respectfully,—Yours, &c.,

OBED HUSSEY.

We must omit the various reports of committees, except on ploughing, which was quite exciting, which with the beautiful address of Dr. Kennady, we may transfer to our columns hereafter.

THE CHEMICAL PRINCIPLES OF THE ROTATION OF CROPS.

Pronounced before the American Agricultural Association, March 4th, 1846, by D. P. GARDNER, M. D., *Honorary Consulting Chemist of the Association, Member of the Lyceum of Natural History, etc. formerly Prof. of Chemistry and Natural Philosophy in Hampden Sidney College, Va.*

MR. PRESIDENT AND GENTLEMEN:

IT is necessary to premise this memoir by explaining that the Executive Committee had expected a communication from another gentleman and did not until a late hour throw the burden upon me, but my desire to gratify them has induced me to hazard the criticisms of the Association—tempered, as I know they will be—by the circumstances of the case. I have selected the subject of the rotation of crops partly because opportunities have fallen in my way to witness some facts which are commonly overlooked by writers on this topic, and because I regard it as a question of pure chemistry. I propose to search after general principles only, for if these can be determined, particular cases or the rotation suited to any district or country will be determined by a little consideration. This is moreover the only way whereby the subject can be discussed so as to be of utility to the whole country, the agriculture of which it is the object of your association to advance. A local rotation is hampered with considerations of expediency, with the price of land and of labor, the merchantable crops, the profit or loss of grazing, which offer obstructions to reaching any generalization; but whereas every crop and agricultural process is profitable in some part of our widely extended country, it is proper that such considerations should be dismissed, and introduced only in reaching particular cases. I know that in this day practical disquisitions are considered superior to all others, but if we make no effort to group facts scattered abundantly around us, the art can never advance. Your Association has the noble object in view of reaching principles in agriculture, and therefore I have no hesitation in presenting a theoretical memoir, the design of which is to attempt the deduction of the principles of rotation.

1. *The Object and Necessity of Rotation.*

That no doubt may arise of the object to be gained by systems of rotation I will advance a definition which may guide us in the following discussion. The object of a rotation is the production of the greatest profit in crops with the least exhaustion of the soil. The views entertained by practical men on the subject are however by no means fixed; in many parts of the country it is imagined that the only condition of a rotation is that the same plant be not cultivated annually, and that a succession of corn, wheat and oats is as much a system of rotation as any other plan—it is indeed a rotation, but not a system.

How far there is any practical necessity for rotations is also a point in much doubt. We are often assured by good farmers that given crops as corn, wheat, hemp, have been grown in certain districts from time immemorial. These are exceptions to a general rule and of no force whatever; they prove that there are spots on the errth's surface of extraordinary fertility, or, what is more frequently the case, that in such districts there is some cause of reparation, by freshets, irrigation, or the washings of adjacent hillsides Wherever the fertility of new lands, which results from the growth of forests or accumulation of uncut grasses for centuries, is exhausted and the soil reduced to a state similar to the subsoil, it is necessary to adopt some means to increase its yield, either by manures or a system of rotation. That this condition is ultimately reached in uplands will be readily granted; the only point worthy of further consideration is how far a rotation will economize manure already in the soil in new lands, or manure added artificially. This is the immediate subject of the memoir.

Experience and analogy have led men to adopt rotations wherever agriculture has been practiced for a length of time. Experience has fully demonstrated that no plant will continue to luxuriate under ordinary circumstances for an indefinite period. To this rule trees are only an apparent exception, for they submit in time to new species when left in a natural state; they live indeed for centuries because by the great developement of their roots they penetrate year after year into new strata of soil; but it is well known that in northern forests the birch and maple follow the pine, and in more temperate regions the pine succeeds the oak and allied genera.

Analogy is remotely a guide to rotations in the case of forests, but if we observe the phenomena of vegetation on new lands it becomes extremely instructive. The planter of the south-west makes haste to cultivate cotton on his new lands, because, for a few seasons he is not overwhelmed with grasses, but is called upon to combat annual weeds easily overshadowed by his crop. If a portion of new land be left waste we discover that a succession of plants invades its surface and not certain species, we find that however convenient the seeds may be, the plants of the first year give place in time to new genera. To this point I have paid particular attention in Virginia, and find that however the species may vary in different soils, there is a sequence of natural families sufficiently apparent. Where the land is remarkably rich, the plants first developed are species of the families Chenopodiaceæ, Polygonaceæ—these give place to Malvaceæ, Compositæ, and Umbelliferæ; and finally species of Leguminosæ, Rosaceæ, and Gramineæ succeed. It is not asserted that other families are absent, but these are so fully developed as to be characteristic of the vegetation. This natural succession differs with the latitude, soil, and degree of moisture; but whatever may be the families, it is sufficiently apparent that the plants of new soils, or rich weeds as they are called, give place sooner or later to those of the barrens. Nor is this the only evidence of a natural rotation. After a season when the roots of grasses have produced a mat of vegetable fibres, is it not well known that the meadow becomes infested with wild onions, buttercups, (*Ranunculus,*) thistles, and other weeds, which, if not exterminated, soon overwhelm the grasses? Hence the prudent husbandman adds ashes or lime, and scarifies his meadows; for by these means the roots are rapidly decomposed, and the soil brought back to a state of composition favorable to the developement of grasses: or if he be conducting a rotation, he ploughs the

meadow, and thus acquires by art a natural coat of manure, of great service to such cultivated crops as, like the Chenopodiaceæ, require a soil rich in organic matters.

II. Explanation of the foregoing natural rotation.

The difficulty of making certain plants grow after each other in the same soil, was said to arise from the mutual repulsion of plants, and explained by Von Humbolt, Plenk and De Candolle, by reference to the experiments of Brugman and Macaire. These naturalists discovered that the root of a plant growing in water, throws out a dark mucilaginous fluid which they called its excrement. Thus the excrementitious deposit of any plant is supposed to be inimical to the growth of its species, and also to some others; but may on the other hand be of service to an entirely different family. De Candolle saw in these reputed facts the explanation of rotations, which he therefore resolved into the art of discovering such a succession of crops, that each might flourish on the organic remains of its predecessors. Clean fallows were also commended as a means of hastening the decomposition of excrementitious matters.

But it is neither satisfactorily shown that excrementitious matters accumulate in the soil nor that they are inimical to the growth of the species. Macaire, Braconnot and others have failed to obtain positive evidence of such dejections, when a soil was employed instead of water. and Alfred Gyde states that plants are benefitted by watering with a solution of their excrementitious matters. Some, as Boussaingault, go so far as to regard the dark mucilaginous matters said t be exuded by roots in water as the effect of a diseased action, denying the excretion, but this cannot be maintained, for amphibious plants as mints, cress, Myosotis palustris and other species, which are not placed in an abnormal situation when growing in water, yield this substance. The experiments of Gyde appear also explicit on this point. If we are to receive the theory of Dutrochet, that the penetration of the soil fluid through the roots is a phenomenon of Endosmosis, there is a necessity of admitting the passage outwards of a portion of the elaborated sap, which Gyde states to be identical in composition with the excrementitious matters collected by himself. That none should be obtained from sand, or soil, under certain circumstances, is not surprising, for the exposure of the exuded matter, over a large surface and in contact with oxygen absorbed from the air, would rapidly change it into a new body capable of escaping the ordinary tests—in the same way that alcohol by mere exposure over an extended surface is rapidly converted into acetic acid by oxydation. Although it is premature to deny that a portion of elaborated sap does escape from the root of some plants, it is very evident that this does not create a deposit injurious to the future growth of the species and is not the principle on which rotations are to be devised.

The natural succession of plants is connected with the presence of organic matter in the soil. The richest weeds which first occupy the surface having the greatest necessity for it, and thus through successive groups to the grasses and forest trees which grow well without any portion in the soil. Other elements of fertility being present, the Chenopodiaceous and allied families thrive only in such localities as yield azotized matters. since they cannot grow without a supply from the soil. This surmise is sanctioned by the obvious presence of organic matters in the soils where they grow, and by the fact that some species exhale ammoniacal gases, but it is fully established by the experiments of Boussaingault. This chemist grew clover, peas, wheat and oats in a soil completely destitute of organic matter and supplied them with distilled water only; the clover and peas were found to double their azotized matter during growth, whilst the oats and wheat gained none whatever. As there was but one source of azote present, the atmosphere, it is apparent that the former have the capacity of supplying themselves therefrom, whilst the grain plants are altogether dependent on the soil. Hence in a soil charged with organic matters, rich in azote, those plants which require a supply by their roots will grow freely, and so far exhaust it in time as to render it unfit for the species, which is succeeded by an intermediate class, and finally by the Graminæ, Leguminosæ, and others capable of subsisting on aerial azote, and so far from exhausting, adding it to the soil. From this function of plants, we see an explanation of the natural rotation, and what is of more moment, a means of adapting our succession of crops to the accumulation as well as removal of azotized matters.

III. The Rotation of One Principle.

Boussaingault, Payen and the majority of French agriculturists estimate the value of manures by the amount of azote they contain; and there is not for general purposes, a more useful test. Therefore the great object of manuring is with them the application of azote to the soil, and the great—if not the sole—principle in rotations the economy of this body. As some crops gain azote from the air, as clovers and grasses, these serve an important purpose in such a plan by concurring with manure in supplying food for the cerealia and such crops as exhaust the soil. According to Boussaingault we should therefore, in a system of rotation, introduce crops in such order that after the manure a highly exhausting plant as wheat may come and this be succeeded by others of less affinity for nitrogen, and again by those which draw their supplies from the air and are the ameliorating crops of this class of agriculturists. The soil now recruited by clover, lucern, grass, etc., will bear another azotized crop and the system is at an end.

There is something charmingly simple and plausible in this rotation of one principle, and its author has done much to establish it by appeal to practice. It is, moreover, identical with the natural rotation observed in new lands, and thus appears to challenge opposition. But there is a capital difference between any artificial and the natural rotation, in this particular, that in the latter case the plants die on the spot and are not removed hence, and whatever exhaustion arises from removing the crop is arrested. Our corn, wheat and oats not only draw azote from the soil but other bodies, and these are entirely withdrawn from the spot, whilst only the azote is removed by the natural succession of plants. Of the inorganic or saline matters much more is often withdrawn, than that of azote; hence, whilst the new land is exhausted of but one element of fertility, the cultivated field loses more.

The greatest objection to this view of rotation is its opposition to experience, for it will be seen that a system, perfectly proper, according to this theory of one principle is inadmissible in ordinary practice. No one who is acquainted with the subject would expect much from the following succession: manure, corn, oats, beans, buckwheat, clover, wheat—yet it is a system in which the azotized matter of the manure would be well economized and the soil rather enriched in this respect. But the farmer knows that

such a succession of seed crops would soon render his land valueless, whether organic matter were accumulated or otherwise. The one principle rotation is not, therefore, acceptable to the understanding of theoretical nor to the experience of practical agriculturists.

IV. The Precepts of Practical Writers.

The points advanced by practical writers as THAER, LOW, STEPHENS and RHAM, as the principles of rotations are of considerable moment, especially in the field, but are no more than surmises for the most part. They may be resolved into the three following assertions and precepts:

1. That each plant requires a particular food and should therefore be repeated at as long intervals as possible.

2. That seed crops being peculiarly exhausting are to be interchanged with green or forage crops and roots.

3. That plants which require hoe tillage, being cleaning crops, should follow those which are sown broadcast and encourage weeds.

In these positions we recognize the imperfect observations of farmers; each one is true within certain limits, and excepting the last, which is only a practical expedient, it is impossible through them to reach any general principle. That each plant requires a particular food is an assertion merely which, so far from carrying conviction, is altogether denied by some practical men and, whether true or false, is beyond the means of these writers to prove. The second assertion, that seed crops are exhausting, is sustained by experience; but in what way they are exhausting is not stated, and without this information the assertion is of little value. As we have remarked, the third position is a practical expedient only, because both seed and forage plants may be hoed crops, as corn, beans, cotton—tobacco, turnips, cabbages.

Hence the precepts of practical writers resolve themselves into the two points, that the same and allied species should be cultivated at as long intervals as expedient and that seed plants are to be as seldom introduced as possible. Both these positions are of practical value, but they do not merely labor under the defect of conveying no precise information, but may be used in forming schemes of rotation of no economy whatever. Thus the following plan is perfectly conformable with these precepts, but very objectionable.

Manure, corn, tobacco, oats with clover, wheat, beans.
or, as in the rotation for clay lands, by MR. RHAM,
Manure, roots, oats with clover, beans, wheat.

In the first a seed crop is followed by a foliage crop, but both of these are exhausting; in the second, beans are succeeded by wheat, both exhausting, but —and this is the imperfection of such arbitrary precepts—the exhaustion in every case is not of the same kind or degree. We are informed that certain crops are exhausting, but not of what; they impoverish the earth, yet we have no knowledge imparted of what substances. It is not enough to say of manure, for this is a compost of all the bodies necessary for plants. If we still further advance the speculations of practical men and assert that the exhaustion is of organic matter or humus, the position is denied by the second precept, for seed crops such as beans are exhausting whilst they require little humus—whilst on the other hand, many forage plants as cabbages, turnips, beets, are not seed crops, but exhausting. We do not deny that excellent rotations devised by practical men do exist, but we do deny that every rotation based upon the foregoing indefinite precepts is necessarily good, and if they be no guide without the assistance of experience gained at great cost and by seperate observations in the field, they are worse than useless. The defect of the precepts rests in this, that we are not informed in what respect the food of different plants varies, nor in what particular seed crops exhaust the soil. The apologists of the system may assert that these are remote facts not within the reach of the propounders, but this being the case the time has now arrived when a closer approximation to truth may be made and the former precepts abandoned or improved by modern investigation.

V. Of the Exhausting Qualities of Crops.

The soil may be exhausted to such a degree that it will cease to produce certain forage plants without the introduction of a single seed crop. If we enrich any field so that it produces tobacco and follow this crop by cabbages, turnips, flax, taking no seed from either, we speedily reach a period when none of these plants will yield a remunerating crop. This is one kind of exhaustion, but it is not complete exhaustion, for corn, wheat, oats, beans and clover seed may be obtained in good quantity from the same field. On the other hand, a few crops of hemp seed linseed, corn, oil grains, wheat, will run down the land to barrenness; but this exhaustion is altogether different from the preceding; it is, in truth, the specific exhaustion produced by seed crops, and it matters not which are the seeds. Hence there are two distinct kinds of exhaustion well known to practical men and it behoves us, who desire the advancement of agriculture, to make the line of demarkation between them bold and distinct. There are other kinds of exhaustion to which we shall refer presently.

In a paper I had the honor of reading before the Association last year, I made a thorough examination into the nature of the exhaustion of lands by seed crops. The object of the communication was to prove the following points:

1. That all seeds contain an excess of phosphoric acid, amounting usually to thirty-five or forty per cent. of the entire ash, nearly the whole of the ash being in many cases phosphates; this was demonstrated in the case of corn, wheat, beans, hemp seed, flax, peas, cotton and other plants. It was also shown that the straw and haulm seldom contain more than one to three per cent. of phosphoric acid, this substance being segregated in the seed. For the analytical evidence of these positions I beg to refer to the Farmer's Dictionary, in which the admitted analyses of all plants hitherto examined will be found.

2. That phosphoric acid is the least developed of all the mineral bodies of the soil, being seldom present to the extent of 0.5 per cent. and usually less than 0.1 per cent., in good soils.

3. That many soils containing from five to twelve per cent. of humus are known to be sterile.

4. That the amount of phosphoric acid removed by given seed crops far exceeds that removed by the ordinary forage crops, being often five times as great.

The evidence of these positions was set forth at length in that communication and is therefore not worthy of repetition. The principle which I believe was fairly reached, and admitted, was that seed crops exhaust the soil of phosphoric acid—the deprivation of which is easily perceived even in the best lands. It is not necessary for me to advance further evidence of this fact before your Association.

If it be admitted that phosphoric acid is segregated in the seeds, it is evident that the exhaustion ef-

fected by foliage plants, as tobacco, cabbages, flax, etc., not intended for seed, and of the root crops, with perhaps the exception of turnips, is due to another cause. The experiments of BOUSSAINGAULT and our own observations on natural rotations will now throw light on this other kind of exhaustion. Some plants draw all their azote from organized matters in the soil, others from the air; some families of plants appear only on rich soils and around dunghills, whilst others inhabit the mineral earth destitute of organic matters. It is evident that phosphoric acid has nothing to do with this peculiarity, for none is removed from the soil, the dead plants restoring it; there is a diminution only in volatile matters or in the azotized products of the decaying organic matter. Let us cultivate a few crops of cabbages or tobacco on a rich spot of land, how soon will the organic matter disappear! Practical men may tell us that this is because the crops are hoed and the soil exposed to the sun, but this is not the cause; the hoeing improves the plant because by introducing air it hastens the decomposition of the organic matters of the soil or assists the fixation of atmospheric nitrogen. (*See Mulder. Journ. fur. Pract. Chem.* XXXII. p. 344). When putrescent manures are added to tobacco, potatoes and similar crops, the indication is to furnish azotized matters, and is altogether different from the object in view when it is added to wheat and certain grain crops. But if this point requires further evidence we may appeal to those plants which exhaust the soil differently under different circumstances. A flax crop raised for its fibre exhausts the soil of azote and may be followed by corn or beans, but if it be allowed to mature seeds it exhausts the soil doubly of azotized matter and phosphoric acid, and cannot be succeeded by corn except in the richest soils. Hemp raised for fibre may be cultivated many years in a soil containing much humus but the seed crops are rapidly exhausting.

Hence we have crops which exhaust the soil of azotized matters—crops which remove an excess of phosphoric acid—and grasses and clovers, cut before bearing seeds, which exhaust the soil of neither of these essential bodies but on the other hand enrich it in organic matters. Many cultivated plants, as corn, wheat, cotton, hemp, flax, cabbages, etc. raised for seed, exhaust in both respects and are therefore peculiarly expensive crops. With this amount of information, based on experience and several hundred analyses, we have the means of rendering intelligible the precepts of practical writers on the succession of crops.

Precept first resolves itself into the principle, that plants exhaust the soil unequally in respect to azotized matters and must therefore be so adjusted that the most exhausting should recur as seldom as possible.

Precept second. Seed crops, which exhaust the soil of phosphoric acid, are to be interchanged with herbage plants, which do not remove as much of this important substance.

These directions have now assumed a definite form and are an explicit guide to the well informed farmer; he at once perceives that there are, over and above the precepts of expediency as to hoed or cleaning crops and deep rooted crops, classes of plants which differ remarkably from each other in their action on his fields. 1 Seed crops which exhaust the soil of azote. 2. Seed crops which do not exhaust the soil of azote. 3. Exhausting forage and root crops. 4. Crops which neither exhaust she soil of humus nor phosphates, but renovate the azote. With this amount of knowledge he can shape a fair system of rotation, whatever may be his crops—he can introduce indigo, cotton, tobacco, corn, bene, oil plants and many others which are not found in the arbitrary tables given by Low, THAER and STEPHENS or falsely placed by BUEL and ARMSTRONG. But if we recur to our definition of the object of a rotation —the production of the greatest profit in crops, with the least exhaustion of the soil or manure—we find that that there is yet something wanting in the principles of rotation. In the fourth class above, we have plants which neither exhaust the soil of azote nor phosphoric acid; it now becomes necessary to know in what respect they do exhaust it, so as to satisfy the economical condition of impoverishing the soil in the least degree.

(To be concluded in our next No.)

BALTIMORE TOBACCO MARKET.

The following statement of the amount of Tobacco inspected in Baltimore possesses much interest.

Inspections of Tobacco in 1846.

Acount of Tobacco on hand in the five State warehouses in the city of Baltimore, on the 1st January, 1846,	15,034	hhds.
Amount inspected during the year 1846	70,632	do
Total,	85,666	do
Shipped and consumed in the year 1846	53,250	do
Remaining on hand 31st December, 1846	32,416	do

The kinds inspected during the year were as follows:—

Maryland,	41,027	hhds.
Ohio,	28,862	do
Kentucky,	862	do
Virginia,	45	do
Pennsylvania,	46	do
Missonri,	160	do
N. Carolina,	15	do
Total,	70,632	

The following is a comparative view of the Baltimore inspections for several years past:

Amount inspected in		1842,	46,639	hhds.
Do	do	1843,	48,282	do
Do	do	1844,	48,932	do
Do	do	1845,	68,513	do
Do	do	1846,	70,632	do

In connection with the subject of the Tobacco trade, we copy from the Alexandria Gazette the following interesting extract of a letter from Amsterdam, and a statement of the stock in several of the European ports. It unhappily too forcibly demonstrates, that the prospects of the tobacco planter are gloomy beyond precedent:

"AMSTERDAM, Dec. 1, 1846.

"Extract of a letter from a respectable house:

"'Our market continues in a dull state, and it is impossible to realize tobacco at prices that will pay cost and charges; and we have no hopes of doing any good for our correspondents unless your planters actually stop the cultivation of the article in a great measure, which has been said for a great many years would be the case,(although thus far it never has.) We should suppose the present low prices would certainly induce planters to stop, to a great extent, until a better state of affairs take place on our side.

"'The price of common Virginia and Maryland was never as low as the present time. The present

price of common Maryland in our market, will leave but little after paying transportation and charges. The stock in Europe we consider equal to three years consumption at least.

Statements of imports, sales and stock of Tobacco in some of the ports of Europe.

LONDON.—Stock on hand 1st December, 1846, 32,836 hhds. against 28,534 hhds. on 1st Dec. 1845; 32,529 hhds. in 1844; 30,389 hhds. in 1843. Of the 32,836 hhds. on hand 1st Dec. 1846, all was Virginia and Kentucky, excepting 128 hhds. Maryland.

ROTTERDAM, December 1st, 1846.

Stock,	3669 hhds.	of Maryland
	3990	Virginia
	848	Kentucky
	42	Stems.

AMSTERDAM, December 1st, 1846.

Stock,	3740 hhds.	of Maryland
	1825	Virginia
	2126	Kentucky

BREMEN. December 1st, 1846.

Stock,	12721 hhds.	Maryland and Ohio
	2835	Virginia
	3079	Kentucky
	2171	Stems.

FEBRUARY WORK—FLOWERS.

Prepared for the Farmer, by Samuel Feast, Florist.

Camellias will now be the chief objects of attraction. Give plenty of water at the roots, and syringe freely over the foliage. As soon as the bloom is over, repot such as need it.

Geraniums.—Repot such as require it and give them plenty of water and fresh air; syringe occasionally with clear water—Fumigate with tobacco as often as the green fly appears.

Azaleas will now be blooming and should receive plenty of water.

Achimenes and Gloxinias should now be potted in light sandy peat, and placed in a warm situation.

Cactuses will now require a little water, using occasionally liquid manure.

Verbenas should now be repotted.

Cinerarias will need repotting.

Hyacinths in pots, now blooming, should have a good supply of water.

Roses should have plenty of water and air. Fumigate upon the first appearance of the green fly.

Oranges and Lemons may now be grafted with success.

Annual Flower Seeds, such as *Phlox Drummondi, Pansy, Ten Week stocks. &c.*, may now be sown in pots or boxes for an early bloom.

Fuchsias and Calceolarias, in small pots, should be repotted.

Plants in frames should have plenty of air in fine weather.

Lilium Lancifolium, and varieties, should be repotted, as directed last month.

The pruning of hardy trees, shrubs, &c. should be attended to.

Hot-beds for sowing the seeds of tender annuals upon, should be prepared the latter part of the month.

THE JEWS.—There are supposed to be 75,000 Jews in the United States. In New York there are about 12,000, in Philadelphia 2,308, and in Baltimore 1800. The whole number in the four quarters of the globe is supposed to be nearly seven millions.

METEOROLOGICAL TABLE, FROM 28TH DECEMBER, TO THE 28TH JANUARY.

Kept at Schellman Hall, near Sykesville, Carroll co. Md. Taken at 6 o'clock, a. m., 2 o'clock, noon, and at 6 o'clock, p.m.

	Wind.			Temperature			Remarks.
28	SW	SW	SW	50	55	53	Clear Rain Clear
29	W	W	W	34	41	37	Clear
30	W	S	S	37	63	50	Rain 1-2 inch Clear
31	NW	W	E	39	46	48	Cloudy Fog
1	W	S	S	54	68	60	Clear
2	SW	SW	SW	54	57	57	Cloudy
3	N	N	N	49	56	42	Clear
4	SW	NE	NE	33	35	41	Hail Rain 1-2 inch
5	W	W	W	39	56	48	Clear
6	W	SW	SW	31	53	49	Clear
7	SW	W	NW	43	48	39	Cloudy Rain 1-2 in. Snow 1-2 i
8	NW	NW	NW	13	28	18	Clear
19	NW	SW	SW	6	31	30	Clear
10	NE	NE	E	28	34	27	Cloudy Snow
11	W	W	W	25	40	29	Snow 8 inches Clear
12	W	W	NW	5	32	22	Clear
13	NW	SW	SW	5	38	35	Clear
14	SW	SW	S	36	48	45	Cloudy Clear
15	W	SW	SW	30	55	50	Clear
16	W	W	SW	53	53	44	Rain Clear,
17	W	W	W	20	29	22	Clear
18	SW	SW	SW	25	32	34	Cloudy Rain 1-2 in Cloudy
19	W	W	W	36	42	31	Clear
20	W	W	W	15	20	18	Cloudy
21	W	NW	NW	10	31	21	Snow Clear
22	NW	NW	NW	8	35	23	Clear
23	W	SW	SW	16	45	41	Clear
24	W	S	W	27	50	46	Clear
25	W	W	W	33	34	34	Cloudy
26	E	E	SE	32	43	50	do
27	W	W	W	34	39	35	do clear
28	W			18			Clear

One square foot of Snow on 11th contained 4 1-2 lbs water.

BALTIMORE MARKET January 27.

[The Hibernia, steamer, at Boston, brings advices from Liverpool to 4th Jan. The political intelligence by her is of but little moment, but the commercial is of great importance to this country; the starving state of the Irish people, has caused a renewed demand for our breadstuffs, and a considerable rise it will be seen has taken place in Flour and Grain—The price of cotton had also advanced.]

Howard Street Flour.—The market for Howard Street Flour has been quite animated during the last two days, and there has been some fluctuation in prices. Sales were made yesterday of 500 bbls. at $5 50; 2500a3000 bbls. at $5,62½; and 4000 bbls. at $5 75. To-day 600 bbls. were sold at $5 62½; 3000 bbls. at $5 75; 600 bbls. at $5 87½; and 3000 bbls. at $6. The receipt price is unsettled.

City Mills Flour.—The sales yesterday and to-day reach about 6000 bbls. The price yesterday commenced at $5.75, but soon rose to $5.-87½. Some lots were purchased at the latter rate this morning. Holders, however, soon raised the price to $6, and considerable sales were made at that figure. At the close few holders are willing to sell except at a considerable advance. On Thursday, sales were made at $6·12, and holders were asking $6·25.

Susquehanna Flour.—Sales of 1200 bbls. this morning at $5·87½.

Corn Meal.—Sales of Baltimore bbls. yesterday, at $4.25. To-day holders are firm at $4.50.

Wheat.—We note sales to-day of Md. reds at $1.30 for prime, and $1·20a1·25 for ordinary to good. A sale of a parcel of Penna. white at $1.30, and another parcel of 4000 bushels of the same description on terms not transpired, but supposed to be at an advance.

Corn.—Corn is in active demand. Sales of Maryland white, new, at 78a80 cents, and of yellow at 79a81 cts. Sales of Penna. yellow at 80 cents.

Oats.—We quote at 36a37 cts.

Provisions.—We do not hear of any very large sales of Beef or Pork, and prices are without change. We quote new Western Mess Pork at $14a14.50; Prime $11.50; Baltimore packed Mess Beef at $11a$12; No. 1. $9.25a9.50; and Prime $7 25a7.50. A sale of bulk Pork (Sides) was made to-day at 7 cents on time.—There are no transactions of note in Bacon. We quote new Baltimore cured Shoulders at 6½a6¾; Hams at 8½a9 cents; and new Western Shoulders at 6½ cents. There is very little old Bacon in first hands and we hear of no sales. Lard is quite firm and prices are looking upward. Sales of bbls. to a limited extent at 7½ cents. The last sales of kegs were at 8 cents—time.

Whiskey.—Small sales of bbls. at 26 cents. Hhds. are held at 25 cts.—24 cts. offered and refused.

Beans 100a110c.; Peas, 80a85; Clover seed $4.50a4.62, for clean, few sales of rippled $4a4.25—Hogs, live, supply small, sales at $6.25a6.50 per 100 lbs.—Beef cattle, on Monday, 500 head offered, 382 sold and 118 remain over, prices ranged from $2.12 to $3.50, per 100 lbs on the hoof, equal to $4.25a6.75 net, and averaging $2.75—Cotton, supply in first hands small, and holders have advanced their rates from ¼ to ¾ cents per lb.—Wood, hickory, $6, oak $5, pine $3a3.25.—Stone coal $6 per ton—Hay, best timothy 11a12 per ton.—Tobacoo, little doing, and but a small quantity coming to market, 16 hhds only were received and inspected during the past week: we quote Md. $1·50a2 for infer'r & com-4a6 for good, 6a12 for fine and better qualities; Ohio com. to mid. 1 50a2 50, good 4a6, fine red 5a9, fine yellow 5a10, extra kinds 10a12.

Printing executed at this Office.

IMPORTANT TO FARMERS.

PREMIUM FARMING TOOLS AND IMPLEMENTS. At the Agricultural Fair held at Easton in November last —the following premiums were awarded to the subscriber, as will be seen by reference to the report of the committee, as published in this number of the 'Farmer' viz:

The Society's highest premium for the best Flushing Plough, Prouty & Mear's $5
" " " " for the best Seed Plough 3
" " " " for the best Subsoil Plough 3
" " " " for the best Fodder Cutter, Royer's, 3
" " " " best Straw Cutter, Hovey's 5
" " " " do. Corn Sheller, Whitman's 3
" " " " do Drag Harrow, do. 3
" " " " Wheat Fan, I. T. Grant's, 5

The attention of Farmers is respectfully called to the above mentioned Implements, which have received in addition to the above, the highest premiums from nearly all the most extensive exhibitions in this country—to the single plough alone, more than $1000, has been paid in premiums.

The above enumerated articles, may always be had at the Warehouse of the subscriber,—and he also takes this method to say, that he has the satisfaction to inform the Farmers and Planters of the South and West, that in addition to his extensive Manufactory in Baltimore, he is now furnished from *Philadelphia, New York*, Boston, Worcester, and other parts of the country, with all new and most improved kinds of TOOLS AND IMPLEMENTS, manufactured expressly for him to suit the various soils and purposes of the south and west. This arrangement enables him to sell wholesale and retail, at manufacturers prices, and renders his establishment the largest and most extensive in the union, (for particulars see catalogue, which may always be had gratis when applied for).

Feb. 1.

PRUNING OF FRUIT TREES.

As from now, to the latter end of February is the proper time for the general pruning of Trees, Shrubs, &c., the subscriber would respectfully offer his services in that branch of his business and begs to assure those who may employ him of his capacity to render satisfaction. JOHN TUOMAY,

PRACTICAL GARDNER, corner of Hoffman & Garden sts. Baltimore.

☞Orders left at Saml. Feast & Son's Exotic Nursery, corner of Charles and Saratoga streets, or at the office of the American Farmer, will meet with prompt attention. Jan 1

THE SUBSCRIBER takes pleasure in returning thanks to the many gentlemen who have favoured him with their MILL-WORK; also to the farmers and planters for their liberal support in the Machine line, and would respectfully inform them, that his endeavors to please will continue unremitting. He is prepared at all times to build any of the following kinds of MILLS. Overshot, Pitch Back, Breast, Undershot, Reacting, Steam, Wind, Tide, Horse-power, or Tread Mills; and having the best of workmen employed at pattern and machine making, he can at all times furnish the best articles at the lowest prices, such as Horsepowers, Pettigrew Shellers, Murray's Shellers, 4 kinds hand and power Shellers, portable Mills adapted to any power, Corn and Cob grinders, Straw, Hay and Fodder Cutters, Carry-log and Mill Screws; also manufactures Hoisting Machines, Hoisting Cranes, Pile Drivers, Turning Lathes and Steam Engines; and any kind of Machine, Model or Mill-work built to order. Any kind of Castings and Smith-work at the lowest prices. I warrant all Mills planned and erected by me to operate well. JAS. MURRAY,

Millwright, York near Light st. Baltimore.

Also for sale, Jas. Murray's patent separating Shellers, which shells and puts the corn in perfect order at the same time, for the mill or for shipping—Persons living near the city can bring with them one or two barrels of corn, and give the sheller a fair trial before purchasing.

He has also for sale, the following second hand Machinery: 2 pair 4 ft 6 in. French burr Millstones, with all the gearing; 1 pair 3 ft 6 in. French Burr Millstones, with all the gearing; and some Saw Mill work—the whole are good, and any or all of the above will be sold low. n 1

AGRICULTURAL IMPLEMENTS—LABOR SAVING MACHINERY.—*GEORGE PAGE*, Machinist & Manufacturer, Baltimore st. West of Schroeder st. Baltimore, is now prepared to supply Agriculturists and all others in want of Agricultural and Labor-saving MACHINERY, with any thing in his line. He can furnish Portable Saw Mills to go by steam, horse or water power; Lumber Wheels; Horse Powers of various sizes, ranging in price from $85 to $200, and each simple, strong and powerful. His *Horse Power & Thrashing Machine*, he is prepared to supply at the low price of $125 complete; the Thrashing Machines without the horse power, according to size, at $30, 40, 65 and $75; Improved Seed and Corn Planter, portable Tobacco Press; Portable Grist Mills complete, $12.

A FARM FOR SALE in Baltimore county, 13 miles from the city on the Harford Turnpike road, adjoining the lands of Judson M. Duckett, and the late James S. Gittings, containing 200 ACRES, more or less, in a good state of cultivation, having all been limed within a few years—the Long Green Run passes through the farm and has a fall of 10 or 12 feet, which could easily be improved for manufacturing purposes—there is a fine young apple orchard of the most choice fruit, having recently come into bearing. The improvements are good, consisting of a STONE DWELLING, 60 feet by 22, two stories high; Barn, Stables, Stone Dairy, Meat House, &c. The subscriber's health not permitting him to attend to it, it will be sold a great bargain and the terms made easy. For further particulars enquire of Saml. Sands, Office of the Farmer, or the subscriber on the premises.

Jan. 1 ROBT. L. HALL.

AGENCY FOR THE PURCHASE AND SALE OF IMPROVED BREEDS OF CATTLE AND SHEEP.—The subscriber takes this method of informing his friends and the public, that he will attend to the purchase and sale of the improved breeds of cattle, sheep, swine, poultry, &c, for a reasonable commission. All letters post paid, addressed to him at Philadelphia, will be attended to without delay.

Nov. 1 AARON CLEMENT.

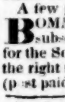
DURHAM BULL.

A young bull, of undoubted purity of blood, and fine form, pure white, with a little roan about the ears, got by Mr. Perine's *Magnum Bonum*, grandson of Belizover's "*Baltimore Beauty*," a fine cow gotten in England, but dropt in this country. Price $50.—Apply to S. SANDS, office of the FARMER.

JAVA FOWLS, $3.50 per pair; Turkey Fowls, $3.50 per pair; mixture of Turkey and Java, breeds, $3.50; Cocks of either breed, $1.75; Poland Fowls, $3.50.

A few pairs of the above for sale—apply at this office. dc. 1

BOMMER'S METHOD FOR MAKING MANURE—The subscriber has been appointed by Mr. Bommer, his agent for the Southern States, and will dispose of the Books, with the right to use them, for any sized farm, at $5 each. Address (post paid) m1 SAML. SANDS, office of "A. Farmer."



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